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environmental assessment

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NATIONAL RIVER • WEST VIRGINIA

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study of development concept alternatives environmental assessment

draft
september 1990

KAYMOOR
NEW RIVER GORGE NATIONAL RIVER • WEST VIRGINIA

UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE

Kaymoor Haulage – 1920 photograph

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Kaymoor Bottom Townsite/Coke Ovens - Circa 1923 photograph

INTRODUCTION

This *Study of Development Concept Alternatives/Environmental Assessment* for the Kaymoor area represents another step in the ongoing planning, management, and development process that is making New River Gorge National River a reality (see Location map). The planning process began with the preparation of the park's *General Management Plan* (GMP) in 1982, which provided a parkwide overview of resource management strategies and visitor activities. In 1988 the *Management and Development Guidelines* were prepared. That document updates the direction established by the GMP, sets the stage for more detailed planning, and establishes the philosophical framework for site-specific decision making. Among the things spelled out in the guidelines are the statements of park purpose, significance, and management objectives listed below:

The **purposes** identified for New River Gorge National River are as follows:

Conserve and interpret outstanding natural, scenic, and historic values and objects in and around New River Gorge.

Allow resource-based recreation that does not impair resource values.

The following statements summarize the **signIficance** of resources at the national river:

Size and topographic relief make the gorge an outstanding scenic resource in West Virginia.

New River Gorge provides some of the best white-water rafting in the eastern United States.

New River is the best warm-water stream fishery in the state.

New River is believed to be the oldest river on the North American continent, and it illustrates "rejuvenated stream" processes.

The river corridor has resulted in unusual plant and animal diversity.

New River Gorge contains remains of the mining and transportation of "smokeless" coal, which played a major role in America's industrial history.

After identifying the purpose and significance of the resources, the following management objectives, which represent goals that park management will work toward, were formulated for New River Gorge National River:

Protect and maintain the natural diversity of plants and animals.

Sustain the warm-water fishery while protecting natural diversity.

Preserve outstanding scenic views in and around the gorge – preserve the predominant natural setting in the gorge from I-64 north and the rural pastoral scenery south of I-64.

Encourage visitors to use related interpretive and recreational sites outside the national river boundary.

Preserve coal mining, railroading, and other historic resources that best illustrate park significance.

In cooperation with others, achieve and maintain water quality to meet state standards that allow for primary human contact.

Develop a system of land-based and water-based recreational opportunities that allows visitors to experience the national river's resources to the extent that natural, cultural, and scenic values are not impaired.

Work with local towns and communities associated with New River to help perpetuate their character and vitality.

Work with the communities to the extent possible to help them maximize economic benefits related to park development without impairing the natural and cultural resources.

For purposes of the current planning efforts at New River Gorge National River, the park has been divided into planning units. A planning unit is a section of the park that has both physical and visitor use characteristics that differentiate it from other sections of the park. At New River Gorge National River there are four such geographic areas that have been designated as planning units. Moving from south to north (following the flow of the river) those units are Unit 1 - Upper Gorge, Unit 2 - Glade Creek, Unit 3 - Middle Gorge, and Unit 4 - Lower Gorge (see Planning Units map).

The Kaymoor study area is within the Lower Gorge planning unit of the park. The *Study of Development Concept Alternatives* is not confined to the Kaymoor historic site alone, but takes into consideration other locations within the Lower Gorge planning unit that relate to the Kaymoor site in one way or another. This includes places that provide views of Kaymoor, that are access points into Kaymoor, or that tell the story of Kaymoor (see Study Area map).

The Lower Gorge unit is characterized by steep slopes and sheer drops-offs from the escarpment that runs along the rim. The narrow river corridor drops significantly in elevation over a short distance, creating many rapids. No active settlements remain in this unit of the park, although the unit does contain remains of important historic sites at Sewell, Nuttallburg, and Kaymoor – sites that produced the New River "smokeless coal" that played an important role in America's industrial history. The natural environment has all but reclaimed most of the land within the unit so river runners are the predominant users in this portion of the gorge. Local hunters and fishermen continue to use this area much as they did before the park was established. The rock outcrops along the rim provide dramatic scenic-viewing opportunities for more passive visitors and rock-climbing challenges for the more adventurous visitor. Road access to the unit is limited to each end of the unit and at Cunard.

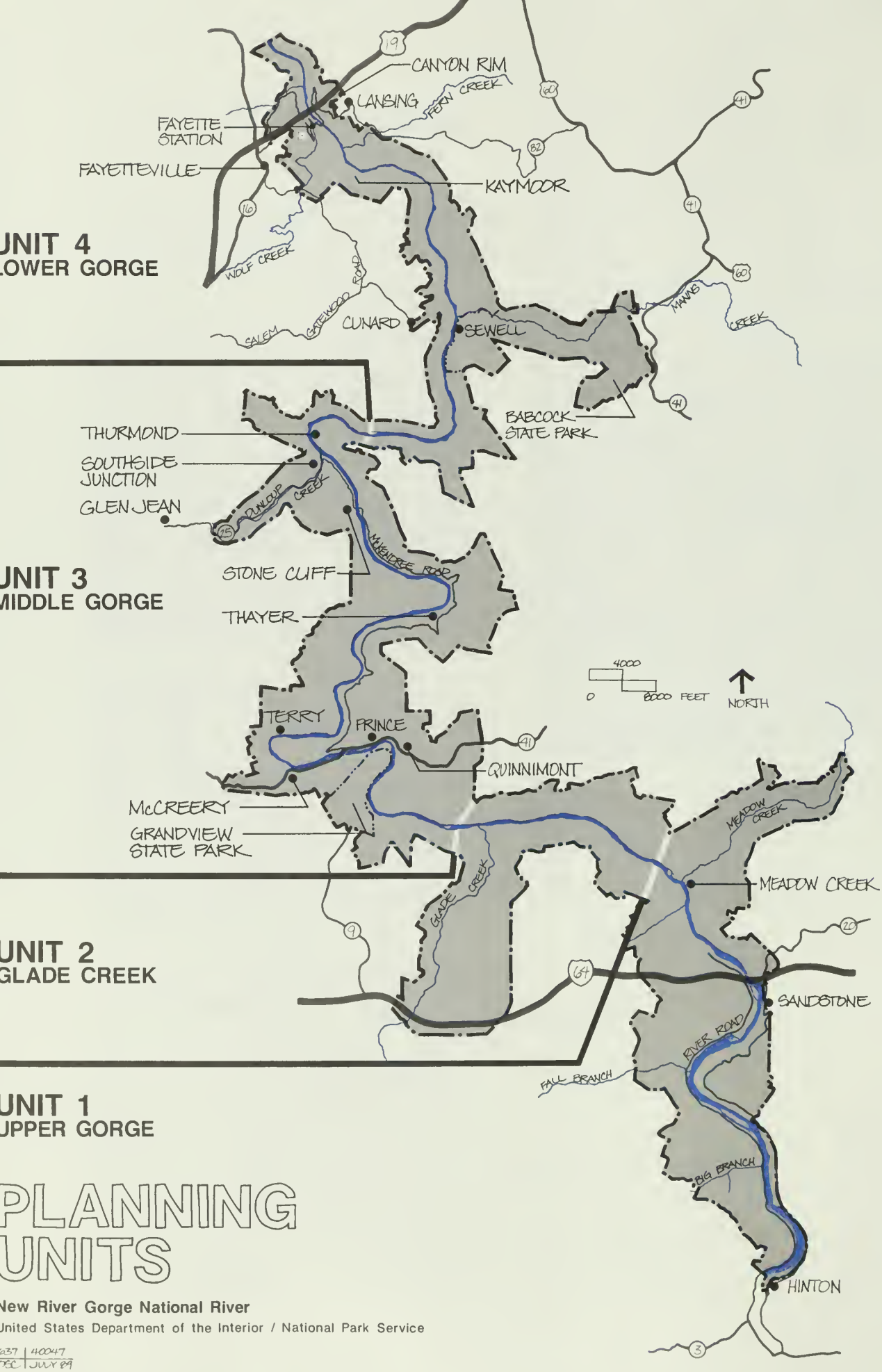
This unit is one of dramatic contrasts in both landscape and visitor experience. On the rim, the emphasis will be to introduce travelers to the New River Gorge. At the other extreme – 1,000 feet below on the river – park users raft or kayak the challenging class V rapids. As a middle ground, opportunities will be offered for picnicking, taking short hikes on loop or linear trails, attending environmental education programs, visiting historic resource sites, or participating in more challenging activities such as rock climbing along the Endless Wall. Most land-based development and destination activities will be at sites on or near the rim, and the river shoreline will be managed as a more primitive area with few modern conveniences.

LOCATION

KAYMOOR

New River Gorge National River
United States Department of the Interior / National Park Service

637 | 40054
DSC | NOV 89



PLANNING UNITS

New River Gorge National River
United States Department of the Interior / National Park Service

637 | 40047
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0 250 500 1000 FEET

STUDY AREA

KAYMOOR

New River Gorge National River

United States Department of the Interior
National Park Service

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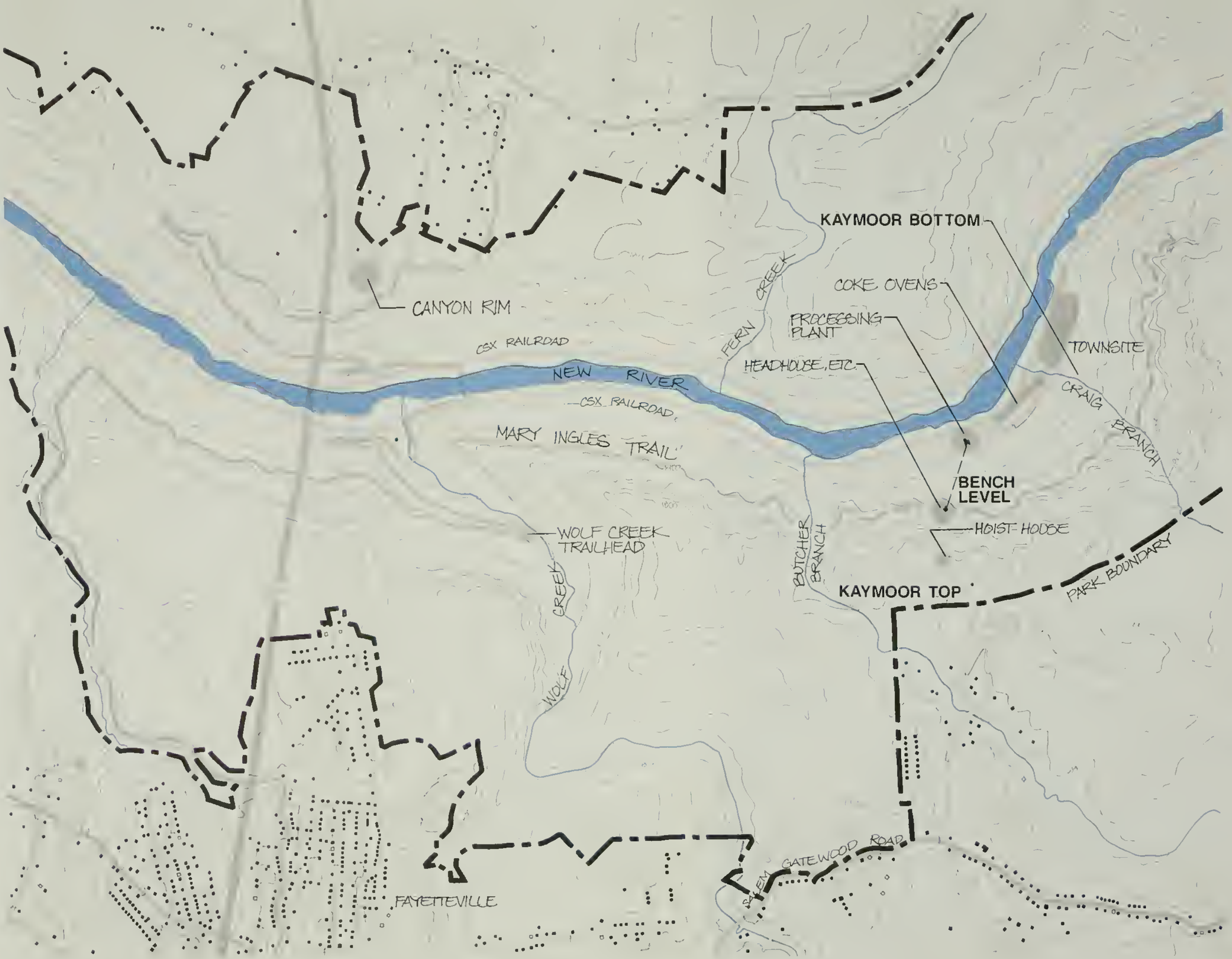

STUDY AREA

KAYMOOR

New River Gorge National River

United States Department of the Interior
National Park Service

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0 250 500 1000 FEET

LAND OWNERSHIP

KAYMOOR

New River Gorge National River

United States Department of the Interior
National Park Service

637 | 40070
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CANYON RIM

CSX RAILROAD

NEW RIVER

CSX RAILROAD

MARY INGLES TRAIL

FERN CREEK

KAYMOOR BOTTOM

COKE OVENS

PROCESSING PLANT

HEADHOUSE, ETC.

TOWNSITE

CRAIG BRANCH

BENCH LEVEL

HOIST HOUSE

BUTCHER BRANCH

KAYMOOR TOP

PARK BOUNDARY

WOLF CREEK TRAILHEAD

WOLF CREEK

FAYETTEVILLE

SALEM

GATEWOOD ROAD

0 250 500 1000 FEET

STUDY AREA

KAYMOOR

New River Gorge National River

United States Department of the Interior
National Park Service

637 | 40055
DSC | OCT 89

PURPOSE OF AND NEED FOR THE STUDY

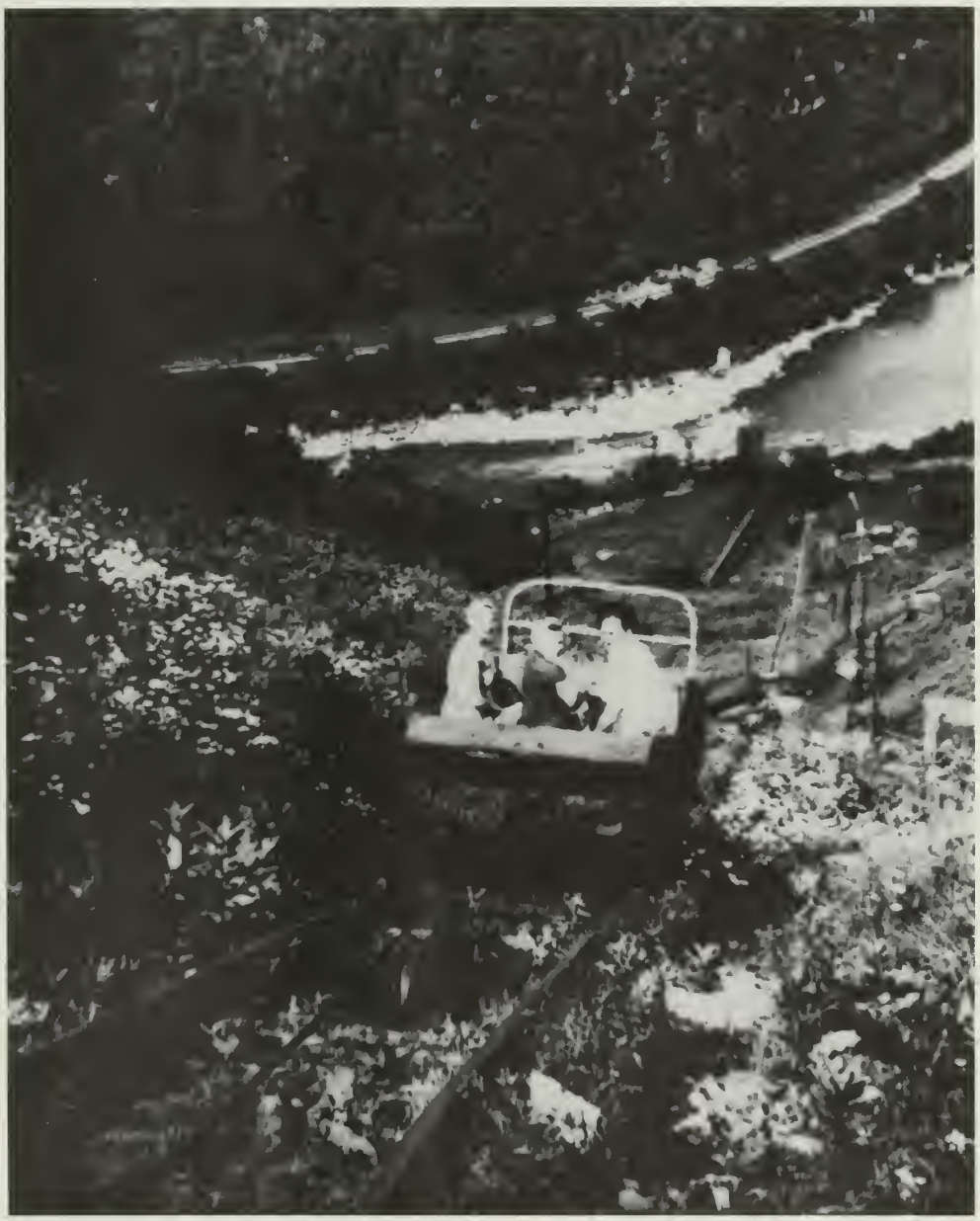
The 1982 *General Management Plan* for New River Gorge National River identified Kaymoor – a mine and company townsite – as a focal point for the interpretation of early coal mining technology in the New River Gorge. Since 1982, a substantial amount of research has been done that confirms Kaymoor's value as an important historic resource.

Measured field drawings by the Historic American Engineering Record (HAER) team have been completed, documenting the layout of the coal processing complex and illustrating the coal processing system at Kaymoor. The HAER drawings with accompanying narrative describing the coal mining and processing system in use at Kaymoor are included in the appendix.

A detailed historic resource study on the Kaymoor mining operation and the social aspects of the two company towns within the complex has been completed by the Denver Service Center historian assigned to the joint DSC-HAER effort. These research efforts verify Kaymoor's important role as a coal mining complex and document its significance. The pattern of events that occurred at Kaymoor, such as the mine and town construction by outside industrialists, the innovative technical solutions to the problems of mining coal within the steep gorge landscape, the use of immigrant and black labor, the fierce struggle to keep out the United Mine Workers of America, the transition from hand loading to mechanical processing, and the legacy of a coal town society that influenced West Virginia history to a great extent, are all nationally significant because of the impact West Virginia coal mining had on the national scene in economic, social, industrial, and labor terms.

Even though the forces of gravity and weather have led to the deterioration of much of the historic fabric at Kaymoor, the extant remains still have the potential to evoke interest in the story of Kaymoor. The challenge at hand lies in protecting or enhancing what remains in this difficult environment, making the complex accessible to visitors, and interpreting those minimal remains in ways that bring the vitality of this once bustling area to life in the minds of modern visitors. This *Study of Development Concept Alternatives* is needed to explore ways to create this change.

Processing Plant/Rail Siding at Kaymoor Bottom – 1920 photograph



Kaymoor Haulage – 1946 photograph

DESCRIPTION OF THE ENVIRONMENT

HISTORICAL CONTEXT

Fayette County, West Virginia, is famous for its abundant natural resource – coal. Blessed with thick seams of "smokeless" coal, Fayette County has made its living through the mining of the 2- to 5-foot seams of 70 percent carbon coal present in the New River coalfield. The history of Kaymoor coal mine no. 1, located on the New River within this famous coalfield, is part of the larger history of coal mining in Appalachia. New River coal contributed economically to the manufacture of low-cost iron and low-cost, high-quality metallurgical coke, and Kaymoor's history is an integral part of the Appalachian coal mining and cultural heritage.

The importance of coal to the United States in the late 19th and early 20th century cannot be overstated. Seventy-five percent of the energy used in this county in 1910 was supplied by coal. There was great interest in southern West Virginia's coal because of its low sulphur content and the high heat level it produced when burned. Mines were opened in the New River Gorge as early as the 1870s and 1880s, but after 1900 West Virginia's coal industry boomed. Coal was shipped on the Chesapeake & Ohio (C&O) Railroad directly to east coast markets. The area's topography provided excellent conditions for low cost mining, and the importation of immigrants and southern blacks provided a low cost labor force. Kaymoor was only one of many mines to be opened up and down the New River Gorge. The Low Moor Iron Company of Low Moor, Virginia, opened Kaymoor in 1900, along with a companion coal mine, Kaymoor No. 2 in 1903.

Miners, equipment, and townspeople were transported from the company towns at the top and bottom of the gorge by a single-track incline with a steam-powered cable hoisting drum (known as a mountain haulage). Coal from the mine was lowered to the processing plant and beehive coke ovens near the railroad tracks at the bottom of the gorge on a two-track gravity incline. Both of these systems operated, with few modifications, from 1900 until 1962.

Kaymoor miners worked the mine in small rooms to pick and blast the Sewell Seam coal face. The coal was moved from a drift opening to the railroad tracks through a highly organized route. When the coal was taken from the mine, it was taken to the headhouse, weighed, and dumped into a storage bin, where it was fed directly into the monitor cars through two chutes. The two-track gravity incline and two 8-ton monitor cars carried the coal down the slope. At the base of the monitor incline, the coal was discharged into a 100-ton capacity storage chute. A reciprocating feeder distributed the coal onto a horizontal conveyor that led into the processing plant installed in 1925.

Inside the plant the coal was either screened, or washed and then screened. The screening sorted the coal by size before it was loaded into railroad cars. When the Low Moor Iron Company owned Kaymoor, the finer coal was coked in the beehive coke ovens a short distance from the processing plant. After Kaymoor was purchased by the New River and Pocahontas Consolidated Coal Company, the beehive coke ovens were shut down and the coal was shipped by rail to customers.

Cokemaking began at Kaymoor soon after the mine opened. Two batteries of beehive ovens made of firebrick, totaling 202, were built. Each was a circular, vaulted chamber with a flat tile bottom. The ovens had an opening at the top and an arched door at the bottom. A fire was built inside the oven to heat the firebrick, and the coal was added at the opening at the top from a "larry" car, which ran on tracks on top of the ovens. The coal was then burned for 48 or 72 hours with low oxygen. Afterwards, workers opened the

HISTORICAL BASE

KAYMOOR

New River Gorge National River

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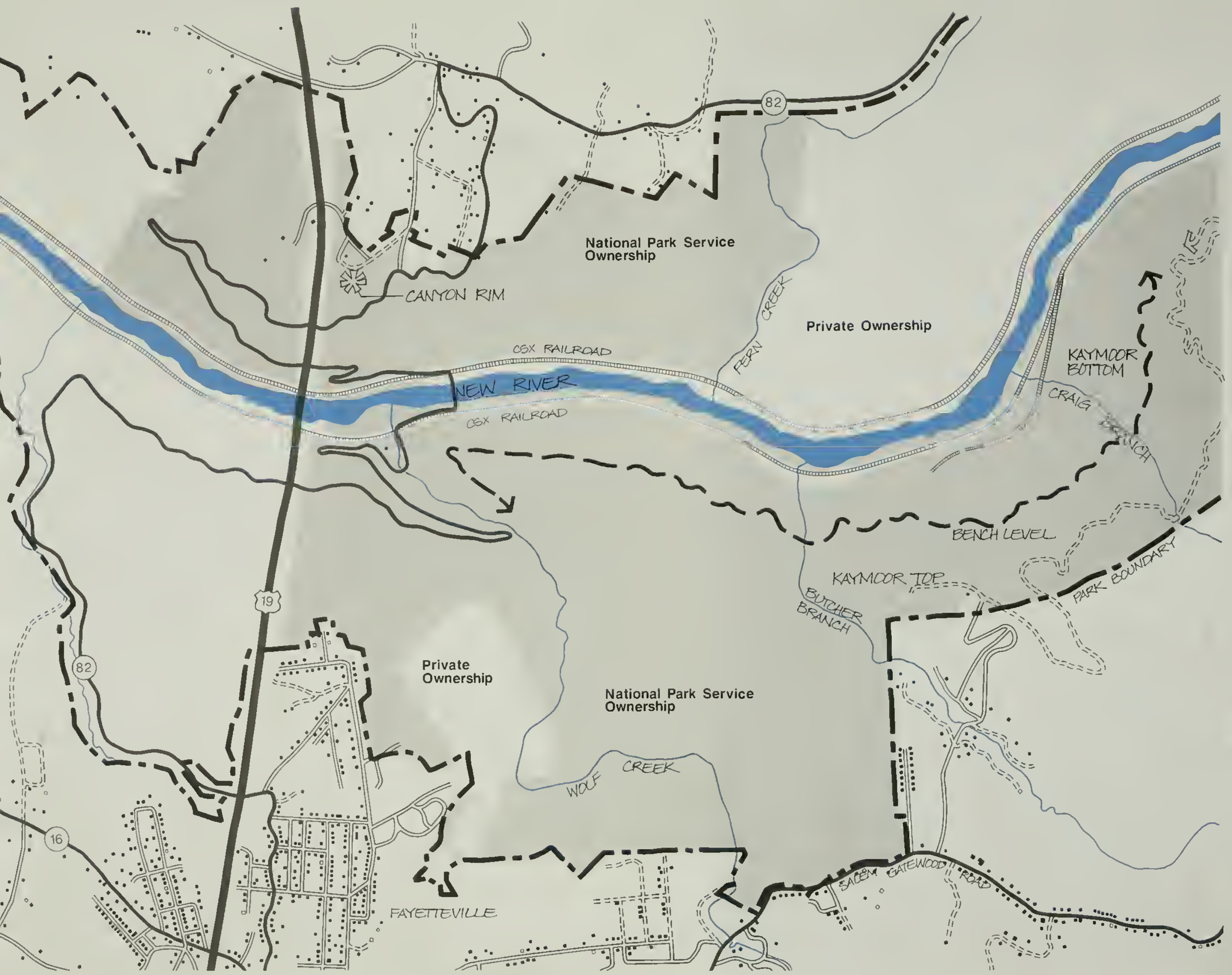

LAND OWNERSHIP

KAYMOOR

New River Gorge National River

United States Department of the Interior
National Park Service

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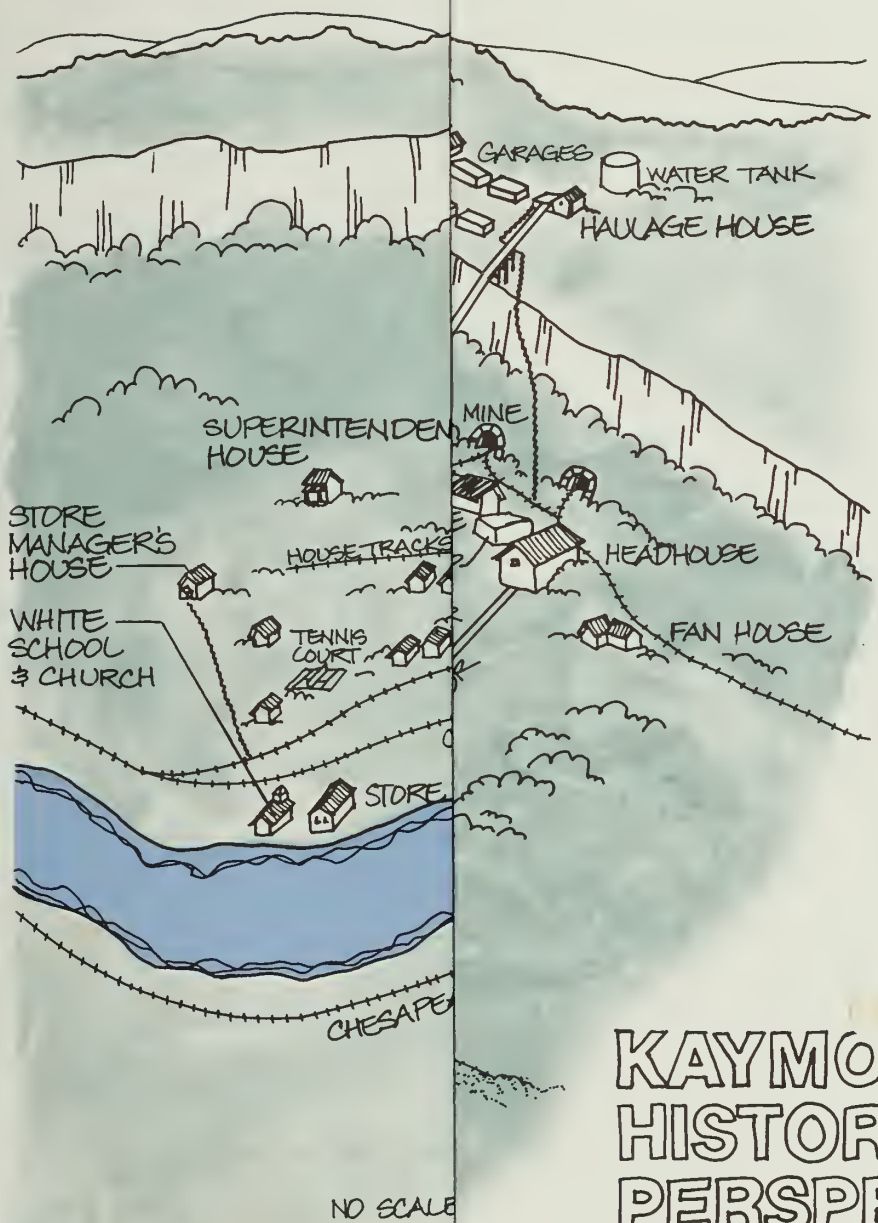

KAYMOOR HISTORICAL PERSPECTIVE

Circa 1925–1935

New River Gorge National River

United States Department of the Interior
National Park Service

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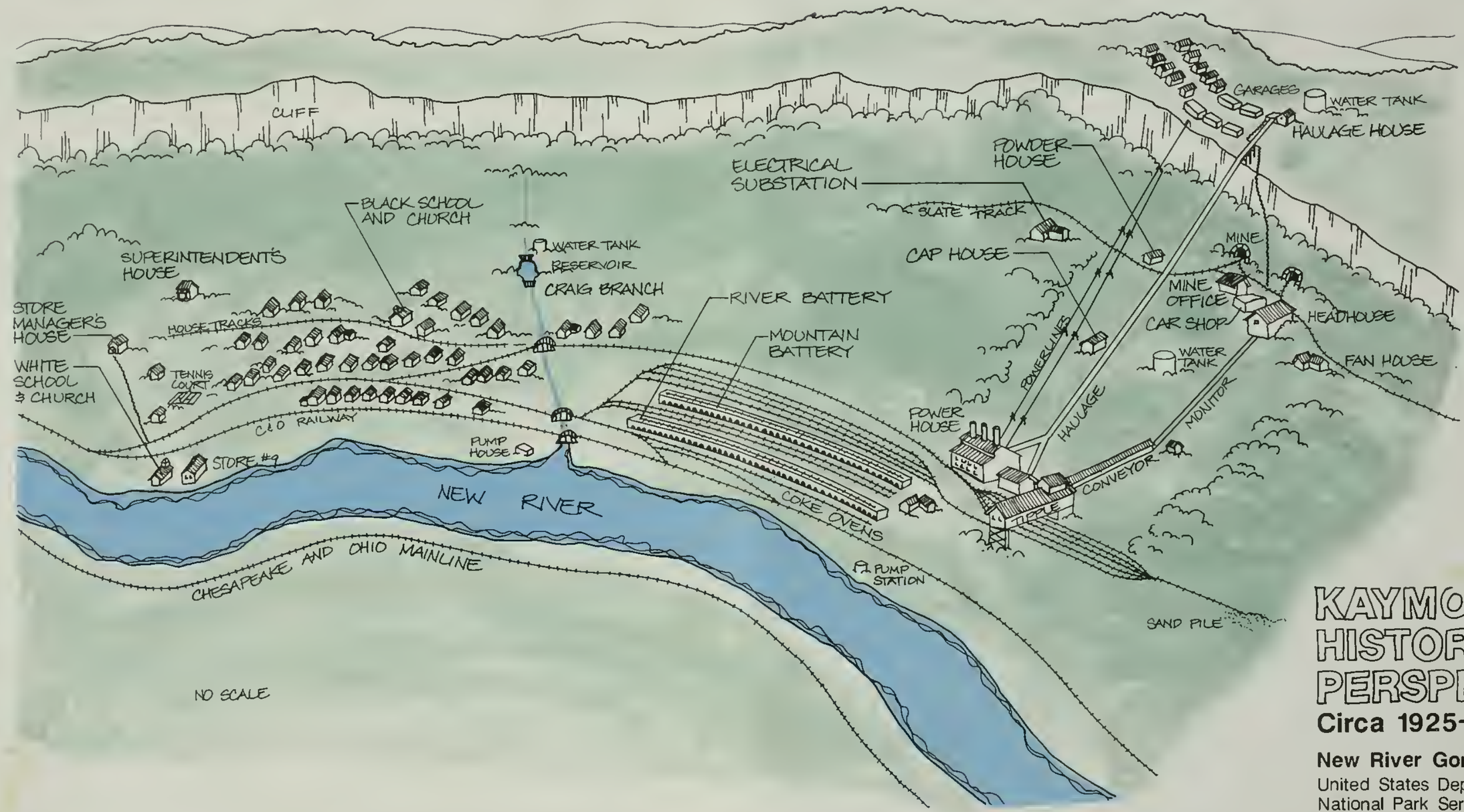

KAYMOOR HISTORICAL PERSPECTIVE

Circa 1925–1935

New River Gorge National River
United States Department of the Interior
National Park Service

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door, watered down the fire, and withdrew the brittle, grey coke. These ovens were closed in the mid-1930s.

The coal town of Kaymoor consisted of two sections: Kaymoor top at the top of the New River Gorge and Kaymoor bottom at the bottom of the gorge next to the river and the south side main line of the C&O Railroad. The settlement of Kaymoor was an adaptation to the environment. The layout of mines and town in New River Gorge was dictated by geography, with mine workings and housing being placed as close as possible to the drift mouth wherever flat space existed. The railroad imposed a linear pattern to the settlement, which, in Kaymoor's case, was affected by the narrow valley and the riverfront. The gorge forced settlement into a linear pattern, although Kaymoor bottom was blessed with more level space than most West Virginia coal towns.

The first houses were constructed in Kaymoor in 1901, with others added in 1902 and 1905. An additional settlement, called New Camp or New Town, was built a short distance from Kaymoor top in 1918-19. Later construction has not been documented. In 1923, Kaymoor boasted 131 homes, all single-family dwellings. All of them were bungalow style, one-story, wood structures with four rooms and fireplaces or stoves, and were approximately 150 square feet in size. The outside finish of the houses was usually board-and-batten, but sometimes weatherboard was used. The inside finish of most of the houses was wood sheath, while some had plastered lathe. Electricity was available in 78 of the houses; only 25 had inside running water. All of the houses had roofs of composition paper, rock post foundations, and a privy and coal shed but no cellars.

Residents were supplied with drinking water from hydrants, drilled wells, springs, and river water. These supply points serviced 106 houses. The remaining 25 had indoor plumbing. The sewage system consisted of surface privies for all the homes. The privies were not flyproof and had no covers or screens. Each family had its own privy anywhere from 20 to 100 feet from the house. Most garbage was given to the animals, and wastewater was thrown onto the ground or disposed of through piped drains.

The appearance of the community in 1923 personified the typical West Virginia coal town. There were no streetlights and no sidewalks, but hard paths led from house to house. Fences were around each house and were generally well kept, except in Kaymoor bottom. Most families grew gardens and kept chickens, pigs, and cows. There were no banks, churches, or saloons in Kaymoor top and bottom proper. A theater and a tennis court were at Kaymoor bottom along with other recreation facilities that included a ball field and pool hall. There was no union hall or other public hall. Two grade schools were at the top and two at the bottom. These were segregated schools for black and white students. The post office was located in the company store at Kaymoor bottom.

CURRENT APPEARANCE

Kaymoor bottom was abandoned in 1952 and the majority of residents moved out. In April 1960 most of the vacant structures were destroyed by fire, and most of the remaining houses were dismantled. Little remains at Kaymoor top, but comparable houses can be found at the New Camp, or at the town of Kaymoor coal mine no. 2, now part of Fayetteville. The Kaymoor bottom site is still intact and discernible, although it is overgrown with kudzu, brush, and trees. Only sections of several houses remain standing. Foundations of houses are visible with a few chimneys in ruins. The major ruin is company store no. 9 between the C&O Railroad tracks and the river.

Although only a few structures remain at Kaymoor bottom, the site itself provides the feeling of a company town whose only

Kaymoor One Townsite – 1950 photograph

access to the outside world was by way of the C&O Railroad tracks.

The growth of trees and foliage at the mining site has altered its historical appearance. Otherwise, the site is relatively physically intact, and its integrity is good in terms of the mine's relatively undisturbed state, protected by its isolated location within the New River Gorge. Individual structures, however, are rapidly disintegrating because of weather and exposure. Trees have grown in and among the coke oven batteries. Some ovens are in good condition while others are almost in ruins. It is difficult to envision the mass and scale of the mine and its auxiliary buildings because of the foliage overgrowth, but close inspection reveals the technological nature of the materials and workmanship involved with mining and processing of the Sewell Seam smokeless coal.

The Kaymoor mine currently consists of an abandoned coal mine, associated extractive and processing machinery, and the site of the accompanying coal town. Kaymoor's major physical characteristics include mining machinery, buildings, and other features along the bench level. These features include openings in the gorge wall for electrical service and ventilation, fan houses, headhouse, three main drift openings, car repair shop, superintendent's office and lamphouse, powder house, and electrical repair shop. Between the bench level and Kaymoor bottom (at about a 30 degree slope) are the monitor tracks and conveyor system. Located at Kaymoor bottom are the processing plant, power house, and two batteries of coke ovens.

VISUAL RESOURCES

The Kaymoor area is one of the most remote and undeveloped stretches of the national river. The wild character of the river, the steep gorge walls, the vertical cliffs at the rim, and a blanket of thick deciduous vegetation are the outstanding scenic resources. When the trees have leaves, it is difficult to see most of the ruins from across the gorge. When the leaves are off the trees, visibility increases.

From the Mary Draper Ingles Trail, which runs through the site, the Kaymoor ruins on the bench level are highly visible throughout the year. The tipple is always highly visible from the river. The coke ovens and townsite are not visible from the river when the leaves are on the trees. The company store is always moderately visible from the river.

CLIMATE

The humid, continental climate is characterized by sharp temperature contrasts. Daytime temperatures range from lows in the 20s (F) in January to highs in the 80s (F) in July. About 45 inches of precipitation is evenly distributed throughout the year. The ridges receive more precipitation than low areas. Total snowfall is about 30 inches. Winter climate is relatively mild.

GEOLOGY

The New River flows northwest from its source in the Blue Ridge Mountains in North Carolina through a scenic gorge cut into the Allegheny Plateau on the west slope of the Appalachian Mountains. The New River is thought to be a remnant of the ancient Teays River, which appeared as the Appalachians were first uplifted at the close of the Paleozoic era and continued its downcutting action through the second Appalachian uplift at the end of the Mesozoic era. Geologists consider the New River to be the headwaters of the ancient Teays River and the oldest river system in North America.

In the study area the Pocahontas and overlying New River formations are exposed. Both formations are nonmarine, coal-bearing sequences of sandstone interbedded with siltstone, shale, and underclay of an early Pennsylvanian age

Sand Car Near Processing Plant – 1986 (haulage car in background) photograph

Electrical Substation Ruin – 1986 photograph

Kaymoor Headhouse – 1981 photograph

(320-330 million years old). The New River formation contains the Sewell coal beds, the source of Kaymoor coal. The cliff-forming Nuttall Sandstone Member of the New River Formation caps the rim of the gorge in the project area, forming a scenic sandstone wall popular with rock climbers.

The Sewell seam at Kaymoor contains premium grade coking coal, which is about 70 percent carbon and varies in height from 2 to 5 feet. The reserves of the Sewell bed are nearly mined out. There are no coal reserves in the study area. The closest large reserves are northwest of Fayetteville along Marr Branch about 2.5 miles from Kaymoor. These reserves are currently being mined by drift entries inside the boundary on the west bank of the river just downstream from the New River Bridge. The mine is not visible from the Kaymoor site. There is an "unsuitable for surface mining" buffer zone that extends 300 feet beyond the national river boundaries. The buffer zone applies to all public parks and was statutorily established by the Surface Mining and Control Reclamation Act of 1977.

There are no other known economically valuable metallic or nonmetallic minerals, oil, or gas in the study area. A natural gas well drilled near the national river boundary at Kaymoor was dry. Commercial quality sandstone, shale, sand and gravel, and clay are as abundant or more abundant outside the study area.

TOPOGRAPHY/SOILS

The width of the gorge in the study area varies between 0.5 and 0.8 mile wide at the rim and 0.1 mile wide at the river. The gorge drops steeply off the rim at a fairly constant slope down to the river, with slopes generally at a 40 percent grade or greater. The elevation is about 1,920 feet above sea level at Kaymoor top and about 900 feet at the river. The bench level where the mine drift opening and headhouse are located is at an elevation of about 1,450 feet. The processing plant is at about 1,000 feet in elevation. The coke ovens and abandoned townsite (Kaymoor bottom) are at 960 feet in elevation.

The Nuttall Sandstone outcropping lies about 100-150 feet down from the top; the cliff is about 30 to 40 feet tall on the Kaymoor side. On the rim of the gorge across the river from Kaymoor, the Nuttall Sandstone cliff extends for several miles and is known as the Endless Wall. The wall is about 80 to 100 feet high.

Soils in the project area are dominated by the steep rock land-Dekalb-Gilpin association. This association consists of rough, broken sandstone cliffs and rock outcrop areas along with moderately deep, well-drained, moderately coarse textured and medium textured, very steep soils on the upland areas. On the foot slopes in the bottom of the gorge, the Ernest-Shelocta association occurs in a strip on both sides of Craig Branch where the tipple, coke ovens, and the old Kaymoor townsite (Kaymoor bottom) are located.

Soil tests will be required before any planned construction. In general, very steep (40-70 percent) slopes in the project area place severe limitations on development. Other potential limitations on development, particularly for the construction of sewage effluent disposal fields, include the presence of bedrock 2 to 3 feet below the surface (Dekalb-Gilpin soils) and a moderately slow permeability in combination with a seasonally high water table (Ernest soils). Soils in the project area have a moderate erosion hazard.

Most of the soils in the project area are classified by the U.S. Department of Agriculture, Soil Conservation Service, as Dekalb-Gilpin very stony soils of 40 to 70 percent slopes. Both Dekalb and Gilpin soils are channery, e.g., the soils contain thin flat pieces of sandstone. Dekalb soils are moderately deep and well-drained, with a moderately coarse texture. They

are formed in material weathered from acid sandstone. The soils have low to moderate available moisture capacity and rapid permeability.

Gilpin soils are also moderately deep and well-drained, with a medium textured surface and a finer textured subsoil than Dekalb soils. These soils formed in material weathered from acid siltstone, shale, and soft sandstone. The Gilpin soils of this unit have a very stony surface layer.

Ernest soils are deep and moderately well drained soils of the foot slopes. There is a firm subsoil layer through which water and air move slowly. Ernest soils formed in acid material that moved downslope from the uplands (colluvial). The Ernest-Shelocta soil in the study area is very stony silt loam of 20-40 percent slopes. The surface layer is very stony.

Steep rock land is the soil classification used to describe the very steep, massive outcropping sandstone ledges and vertical sandstone cliffs more than 10 feet high. Large boulders have accumulated at the base of many of the cliffs. This classification describes the Endless Wall across the gorge from Kaymoor, as well as the part of the project area below the hoist house where the old stairway is located and the cliff below the stairway.

There are six mine dumps (refuse slides) at the Kaymoor site. The dumps are piles of waste from deep coal mines. They are a mixture of coal, slate, sandstone, and shale piled near mine openings. The mine dumps are capable of supporting only a low density of vegetation with a limited number of species. One dump at rim level has been regraded and revegetated and is now stable. Another dump on the outslope has revegetated and is also stable. Three dumps are partially vegetated and one dump near the bottom is unrevegetated and eroding. Eroding refuse from the mine dumps is a potential environmental hazard.

There is no prime agricultural land within the study area.

WATER RESOURCES/QUALITY

Tributary creeks of the New River on the west bank are Craig Branch upstream of Kaymoor and Butcher Branch and Wolf Creek downstream. Craig Branch flows into the New River by way of a large concrete culvert under the CSX railroad tracks between the coke ovens and the townsite. Wolf Creek is not in the immediate study area. Fern Creek flows into the New River downstream of Kaymoor on the east bank of the river. There is some seepage from gated mine entrances on the bench level north of the main portion of the site. This seepage eventually drains into Butcher Branch. The eroding mine dumps and refuse piles drain into the river. It is not known whether there are hazardous materials present on the Kaymoor site that would adversely affect the water quality. A hazardous materials survey will be done at Kaymoor.

There is no water quality data for Craig Branch or the river in the vicinity of the study area itself. Studies done in 1987 by the West Virginia Department of Natural Resources (WVDNR) showed the overall water quality of the New River at Thurmond (above study site) and Fayette station (below project site) to be in the good range. Tributaries generally had poorer overall water quality than the river, attesting to the dilution potential of the river.

FLOODPLAINS/WETLANDS

The majority of historic structures at Kaymoor lie above the 100-year floodplain and do not require special flood protection measures. The ruins of the company store lie on the riverbank and are within the 100-year floodplain.

There are no wetlands, as identified by the U.S. Fish and Wildlife Service

(USFWS), in the study area; however, there are riparian zones adjacent to the New River, the Craig and Butcher branches, and Fern Creek.

VEGETATION

The New River functions as a migration corridor for plants because it is the only river flowing from southeast to northwest across the Appalachians. Hence, the flora is a combination of native and introduced species, coastal plain and prairie species, and high and low altitude species mixed with the common plants of West Virginia.

Common trees include species of the red and white oak groups, red maple, black locust, basswood, tulip poplar, buckeye, beech, hickory, and eastern hemlock. Virginia pines and shortleaf pines are common on drier sites. Elm, silver maple, sycamore, and sweet gum species are common along the river edge. Paulownia, an introduced species valued for its wood, is common in some parts of the project area. A variety of low trees and understory shrubs including dogwood, redbud, witch hazel, magnolia, persimmon, and rhododendron are also present. Poison ivy is abundant and nettles are present in the project area.

Kudzu has completely covered the former housing area at Kaymoor bottom. Trees are growing inside the foundation walls. The coke ovens are being destroyed by both native and exotic (paulownia) trees.

CSX Transportation maintains a right-of-way through the study area and controls vegetation through manual cutting and herbicide application. Herbicides are applied with equipment mounted on trains, using various combinations of 2,4-D, Roundup, Oust, Arsenal, and Karmex in mid-May and again in August if needed.

WILDLIFE

No exclusively aquatic species or fish would be significantly affected by this project. Common amphibian and reptile species include the spring peeper, American toad, green frog, box turtle, stinkpot turtle, snapping turtle, copperhead, timber rattlesnake, and other nonpoisonous snakes. There are also numerous salamander species in the area.

The most common mammal species are the opossum, cottontail rabbit, deer mouse, eastern chipmunk, muskrat, groundhog, fox and gray squirrel, raccoon, mink, striped skunk, red and gray fox, and white-tailed deer.

Trapping is prohibited within the national river boundary. The area is open to hunting during seasons established by the WVDNR Wildlife Resources Division as follows:

Late fall – white-tailed deer
Mid-October through February – ruffed grouse
November through February – bobwhite quail, cottontail rabbit, and snowshoe hare
October through January – squirrel
April and May – turkey

The area is open to migratory bird hunting; mourning doves, Canada geese, and some species of ducks may be present in the Kaymoor vicinity during the appropriate seasons, which are generally between September and January. The Kaymoor area may be open to bear hunting some years.

The gorge may be divided into three general habitat types used by birds – riparian along the river, the upland slope covered by a second growth deciduous forest, and the drier rim area. The riparian zone is an important nesting area for songbirds. The New River is a corridor along which songbirds migrate; species present at Kaymoor vary with the season. Representative bird species that occur at the Kaymoor site throughout the year are ruffed grouse, wild turkey, mourning dove, barred owl, red-bellied woodpecker, downy woodpecker, pileated woodpecker, blue jay, American crow, Carolina chickadee,

tufted titmouse, white-breasted nuthatch, Carolina wren, northern cardinal, song sparrow, and American goldfinch. An additional 51 species of birds are common at the Kaymoor site during at least two seasons.

The abandoned mine portals are potential habitat for bats, as well as known habitat for the eastern woodrat (*Neotoma floridana magister*), a federal candidate threatened/endangered species. Bat species known to use other mine portals within the New River boundaries include the eastern pipistrelle, little brown bat, and big brown bat. Portals in the study area should be surveyed to identify whether the portals are used, when they are used, whether they are used for hibernacula or maternity roosts, and which species may be present. Five of the nine portal openings or mine entries have been gated to prevent human access, using a gate design that allows passage by bats and small animals up to the size of foxes and raccoons. The other four entries have been sealed.

SPECIES OF SPECIAL CONCERN

Although not officially listed by any agency as threatened or endangered, several animal species may be present in Kaymoor that require special consideration because of their rarity. The project area should be surveyed for these sensitive species, and, if present, measures would be taken to protect them from any adverse impacts.

Two animal species that might occur in the Kaymoor project area were formerly listed by the USFWS as category 2 candidate threatened and endangered species but have since been removed from the candidate list. (A category 2 candidate species is one for which there is information indicating that the species could possibly be threatened or endangered but for which substantial data on vulnerability or threat is lacking.) Both the Appalachian population of the green salamander (*Aneides aeneus*) and the northern long-eared bat (*Myotis septentrionalis*) are now listed only as category 3 species, meaning the species is no longer being considered for listing as threatened or endangered. The northern long-eared bat may use the abandoned mine portals. The green salamander, listed as rare by the WVDNR Natural Heritage Program, typically occurs in rock crevice habitats and is fairly common at some mine entrances in eastern Kentucky.

Two other amphibians and a reptile that occur in the Kaymoor area are species of special concern to the WVDNR: the black-bellied salamander (*Desmognathus quadramaculatus*), the Jefferson salamander (*Ambystoma jeffersonianum*), and the broadhead skink (*Eumeces laticeps*). Information on these species and the green salamander was collected in the summer of 1989 as part of the "Upland Vertebrate Survey" and will be available soon.

Black bear may occasionally use the Kaymoor area but are not commonly seen. The Kaymoor area (Fayette County) may be closed to bear hunting at the discretion of the WVDNR.

The eastern subspecies of wild turkey (*Meleagris gallopavo*) occurs only on upland slopes. The park staff have seen turkeys on the rim of the gorge opposite Kaymoor but not at Kaymoor itself. Ruffed grouse, another upland game species open to hunting, have been seen at Kaymoor.

Aquatic species (cooter turtles and endemic fishes and mussels) would not be directly affected by this project.

A sedge (*Carex umbellata*) occurs north of Kaymoor on rock outcrops at Long Point on Wolf Creek. This species is classified by the WVDNR Natural Heritage Program as an uncommon or rare species in the state. Rare plant surveys by the park staff indicate that there are no other rare plants in the project area.

THREATENED AND ENDANGERED SPECIES

The state of West Virginia does not have threatened and endangered species legislation that accords listed species legally protected status. However, NPS policy does take into account any state species of special concern and treats such species as it would federally listed species.

There are no federally listed, proposed, or candidate threatened or endangered species of plants or animals known to occur at the Kaymoor site, nor is there any designated critical habitat for any threatened or endangered species. However, detailed surveys should be made and appropriate habitats searched for presence of threatened or endangered species prior to implementation of any proposed actions described here.

The WVDNR in conjunction with the USFWS has an active program to reintroduce the peregrine falcon (Falco peregrinus), a federally listed endangered species, into New River Gorge. There is a hacking site across the gorge from Kaymoor, which is active between May and September. The gorge has excellent peregrine habitat. It provides cliffs, nearby water, and a good population of birds for a food source.

Abandoned mines in Kentucky and Tennessee are habitat for two species of federally listed endangered bats, the Indiana bat (*Myotis sodalis*) and the Virginia big-eared bat (*Plecotus townsendii virginianus*). Although neither species has been seen using the Kaymoor mine, the migratory habits of the bats do not preclude their occasional presence. Five drift openings have been fitted with bat gates that offer protection against vandalism and disturbance, the two major causes of decline for these species. The Virginia big-eared bat is more of a cave dweller than the Indiana bat, which prefers to roost under tree bark during the summer.

Critical uses of the mines by these (and other nonendangered) bats would be as maternity colonies or hibernation sites, although summer roosts are equally critical for the endangered bat species.

Three other category 2 threatened and endangered animal species that could potentially occur in the Kaymoor mines include the Eastern small-footed bat (*Myotis leibii*), Rafinesque's (southeastern) big-eared bat (*Plecotus rafinesquii*), and the Eastern woodrat (*Neotoma floridana magister*). The latter species may actually be locally common at Kaymoor, but should be afforded maximum protection due to its candidate status.

The park has done a rare plant survey of the Kaymoor area. No rare, threatened, or endangered plant species were found or are known to occur in the project area.

"Uncle Wash" Langhorn, Kaymoor Bottom – 1950 photograph

FACTORS AFFECTING PLANNING

SITE SIGNIFICANCE

Kaymoor includes a coal mine, associated machinery and physical plant for processing coal, administrative structures, and the site of a town built for housing mine workers and their families. The mine's headhouse and incline systems illustrate the special techniques employed by early 20th century American miners to extract coal from outcrops on steep slopes. Other integral elements of the mine's support systems survive, providing examples of typical mining practices of the era. The two extant inclines and headhouse are examples of specialized engineering adaptations to mining coal from the steep-sloped outcrops. The processing plant, with its Baum jig washer patented by Simon-Carves of England, shaker screens, and other equipment, is exemplary of the move in the 1920s to produce mechanically cleaned coal for a general market. Kaymoor top and bottom are significant for being representative of coal towns associated with bituminous coal mining in West Virginia. Kaymoor represents the best extant remains of a turn-of-the-century operation in the New River "smokeless" coalfields of central West Virginia.

SITE PURPOSE

The purposes of the Kaymoor site are as follows:

- To serve as an authentic location for interpreting coal mining in New River Gorge – specifically the New River coal mining process, associated technological innovation, and the coal miner's way of life.

- To preserve extant physical and nonmaterial industrial era (1873-1962) remains of Kaymoor.

CULTURAL RESOURCE DETERIORATION

It is unfortunate that the historic structures at Kaymoor are not as enduring as the memories they evoke or the historic period they helped define. These structures and the tools and equipment that they housed were intended to last as long as they served their immediate purpose, which in this case was the extraction, sorting, and transporting of coal. They were structures that required constant maintenance and repair to bolster them against the ever-present natural forces of gravity, weather, and vegetative incursion. They were never intended to stand on their own without constant care.

When the mine was abandoned in 1962, those silent forces behind the process of deterioration, collapse, and disintegration began their slow but steadily accelerating domination of Kaymoor. When the New River Gorge became a national river in 1978, the historical significance of Kaymoor was recognized but not officially verified or documented. By the time that had been accomplished, a decade later, Kaymoor's structures had already suffered 20 years of neglect and were in an advanced state of decay.

Emergency stabilization work now underway at Kaymoor is intended to make the site less hazardous to park users, to temporarily prevent further deterioration of some key structures whose remains are most visible, and to uncover many of the ruins that have been obstructed by debris and/or vegetation. Long-term preservation would require perpetual maintenance if the physical resources are to endure.

PUBLIC SAFETY

The physical dangers associated with unstable structures and industrial debris throughout the Kaymoor site are easily recognized and are being addressed by emergency stabilization. Other industrial-related hazards also exist that may not be as readily visible or apparent, especially to the unsuspecting park visitor unfamiliar with this environment. Toxic materials (including asbestos and PCBs) are known to exist on the site, although the exact extent and distribution have not been documented.

The presence of flammable materials (wooden structures, coal, and woody vegetation) throughout the site combined with the difficulty of access for fire fighting and/or evacuation make fire a serious threat.

The coal mines, although gated to prevent unauthorized entry, are potentially dangerous should someone break in. The possibilities for cave-ins, ignition of flammable methane gas, harmful fumes and air, or getting lost in the labyrinth of passageways are hazards to trespassers.

The active CSX Railroad at the bottom of the gorge is an attractive nuisance because it offers the easiest (flat) pedestrian access to the tipple, coke ovens, and townsite. Because there is no physical barrier or posted warning separating park land from the railroad right-of-way, people may be enticed to walk along the tracks, not recognizing the danger or the illegality of their actions.

Hunting is permitted within the national river boundary, and the danger of stray gunfire injuring someone on the site is a possibility.

The natural environment can contribute to the hazardous condition of Kaymoor. The mere steepness of the gorge and the sheer cliffs make travel up or down the slopes potentially dangerous. Land and rock slides occur occasionally, threatening anyone inadvertently caught below. Probably the most pervasive naturally occurring threats are the rampant growth of poison ivy throughout the site and the presence of stinging insects, particularly yellow jackets. Copperheads and rattlesnakes are rarely encountered on the site.

ACCESS

The fact that the various sections that comprise the Kaymoor complex are difficult to reach should come as no surprise to anyone familiar with this vertical landscape. Because the Kaymoor complex and the associated story includes sites from top to bottom of the gorge, access to all levels is important. Furthermore, access is necessary for both preservation and interpretive visitor use activities.

Pedestrian access is difficult and confined to the able-bodied individual, but is possible at the bench (mine) level, using the Mary Draper Ingles Trail. The closest trailhead is at Wolf Creek on Route 82, which has limited parking and requires a 40-minute hike each way. A second trail access to the bench level is provided, using a trail from Kaymoor top near the former hoist house. This trail is steep in spots, but it is much shorter (a 15-minute hike) than the Mary Draper Ingles route. The National Park Service does not own some of the land at Kaymoor top that could accommodate trailhead facilities for this access, nor is most of the access road to it from Gatewood Road within the park boundary. That access road is also in a condition that does not meet NPS standards for visitor access.

The concrete steps historically used to reach the bench level from the top have been uncovered by the emergency stabilization project crew. They are intact except for the missing wooden section that had connected the two concrete sections at the cliff face and the absence of the iron handrail. The steps are narrow and steep and probably more dangerous and strenuous than the top to bench trail described above.

There is no known existing pedestrian link between the bench level and the bottom (tipple and townsite level). Travel from location to location at the bottom level is relatively flat but is hindered by vegetative overgrowth and the proliferation of poison ivy. Just below the Kaymoor ruins at the bottom level are the CSX Railroad tracks, with all the associated dangers discussed previously.

Access to the site for boaters is possible but will require authorization from CSX Corporation to permit use of the Craig Branch culvert as an underpass, and trail construction to connect the boat landing site to the historic site. Such a trail would not only provide access to Kaymoor for boaters but would also permit shoreline access from Kaymoor.

A critical access question that has not been resolved is how to get vehicles and equipment into the different parts of the site for preservation work and future park operations, including maintenance and protection activities. Similar to the pedestrian situation, it is possible to get to the bench level by way of an access road from Kaymoor top. This is currently about a 40-minute drive over a very poor road, but the potential exists for route improvement.

The situation for vehicle access to the bottom is not so optimistic. No access road exists nor is there any real potential for construction of one. The railroad offers the only logical means of temporary equipment access, which, of course, would require the cooperation of the railroad and the reconstruction of the Kaymoor siding.

NATURAL RESOURCES

Vegetation that has – in the natural process of succession and recovery – grown up in and around much of the historic fabric threatens to obscure and collapse structures, particularly masonry walls. Removal of such material could increase runoff and erosion. Eradication of kudzu from the townsite where it has entombed the foundation ruins would probably require the use of herbicides (NPS specified as acceptable). In accordance with NPS policy, integrated pest management procedures would be used to determine the actual method of control to be used.

Because Kaymoor is easily visible from the opposite rim of the gorge, it may be decided to establish viewpoints there. If that is the case, care must be taken to protect the existing peregrine falcon hacking site from disturbance and even to restrict access during specific times of the year.

USER GROUPS

New River Gorge National River is a young, undeveloped unit of the national park system. As such, visitation and visitor use patterns are still in a formative stage. With the exception of those user groups, such as hunters, fishermen, and rafters, whose activities relied on park resources even before the park was established and who continue to use the park today, there are few well-established user groups. For Kaymoor it is more appropriate and probably necessary to talk about potential user groups because the site is not a developed use site as yet. The following are considered to be potential Kaymoor user groups:

Mary Draper Ingles Trail Hikers

These users are assumed to be passing through Kaymoor at the bench level, but the primary motivation is hiking, and Kaymoor is just one feature along the route to punctuate their walk. They may be traveling great distances or merely taking a shorter day hike from close-by trailheads (when established). In either case they would likely stop at Kaymoor for a rest and relief break given appropriate facilities. Identification and some interpretation of the site would add interest to their experience.

People with Personal Ties to Kaymoor

This user group includes former Kaymoor residents, their descendants and/or relatives with memories of people, places, and events related to Kaymoor. They are likely to have a greater sense of loss in the deterioration of the site, but also constitute a valuable oral history resource in themselves.

Industrial Academicians

This group includes people with both academic and professional interest in industrial history and archeology – particularly regarding coal mining. They need access to both the in-situ remains as well as archival and artifact collections.

Elderly Tour Groups

These are elderly visitors on bus tours. They stop at the Canyon Rim visitor center and are introduced to coal mining as a New River interpretive story. Some members of these groups have mobility and/or vision and hearing limitations. If they are to have access to the Kaymoor site, special transport facilities would be necessary.

Nonlocal Family Groups

These are groups of adults and children with varying levels of interest in the educational and/or recreational opportunities associated with New River.

Schoolchildren and Teachers

These are local and regional school groups of varying sizes on field trips for the purpose of environmental education and local history and culture awareness.

Boaters

These are primarily commercial outfitter led groups looking for activities to supplement their white-water raft trip.

Concrete Steps from Bench Level to Cliff Face – 1986 photograph

SUMMARY OF ALTERNATIVES

Alternative 1 – Preferred Alternative

The development concept alternative most preferred by the National Park Service is also the most comprehensive of the four presented in this document. In fact, the preferred alternative is somewhat of a combination of several alternatives – containing elements from each, plus more extensive restoration and stabilization, and easier access throughout the site. That access would be provided by a visitor transport system that would operate between the top, bench, and bottom levels of the Kaymoor site. All three levels would also be linked with new foot trails and/or stairs. Overlook sites across the gorge in the Fern Creek Buttress area would also be developed if and when feasible. These viewpoints would offer opportunities to see Kaymoor from more remote locations. Active interpretive programs and operation of facilities at Kaymoor would be seasonal under all alternatives. The site would still be accessible by foot year-round, and some in-place interpretive signs would allow self-guided exploration under each alternative.

Alternative 2

This alternative would emphasize the continued stabilization and maintenance of Kaymoor's structures in essentially their current condition. No restoration would be undertaken, but repairs required for public safety would be done to be compatible with the historical context. Access throughout the site would be improved by the construction of new trails and/or stairs, but would remain a strenuous activity. This would primarily be a self-guided experience with interpretive waysides offering information about the site. More in-depth information would be available through publications and seasonally scheduled guided walks.

Alternative 3

The third alternative would be similar to alternative 2 in that only selected stabilization of major structures would be done at Kaymoor. Access to the Kaymoor site would be more limited, however, but opportunities to view and interpret the site from remote locations across the gorge with the aid of telescopes and wayside exhibits would be developed.

Alternative 4

The final alternative is the least extensive and would entail stabilization or removal of structures only as necessary to protect visitors from hazards as the site continues the process of natural deterioration. No other attempts to stop that process would be undertaken. Hikers along the Mary Ingles Trail would discover the ruins of Kaymoor, which would simply be identified by interpretive signs.

ALTERNATIVE 1 – PREFERRED ALTERNATIVE

Preservation Emphasis

Selected facade restoration for the entire site.

Vegetation removal to expose relationships among structures and allow visibility from route overlooks.

Restoration of some equipment on-site.

Visitor Experience Emphasis

Barrier-free vertical access to all three levels at Kaymoor where the past can be experienced through interaction with people knowledgeable about Kaymoor, and the experience of entering a mine mouth and seeing (and touching) mining tools and equipment on-site.

A visual experience of Kaymoor from overlooks across the gorge where Kaymoor is seen as part of the larger gorge landscape and its relative inaccessibility is apparent. The visitor gets a perspective of the relationship between the different parts of the Kaymoor complex. Access to the overlook sites is a moderate hike that offers its own intrinsic pleasures and rewards.

Objectives

Cultural Resources

To restore the exterior facade of structures that represent the major coal mining functions at Kaymoor.

To remove kudzu and other damaging vegetation to reveal the Kaymoor bottom townsite.

Natural Resources

To minimize adverse impacts and provide maximum protection for native vegetation and wildlife.

To protect potential bat habitat in the Kaymoor area.

To protect peregrine falcon hacking site and adjacent area from any disturbance.

Public Safety

To provide a safe experience for all visitors free from the dangers associated with hunting, the active railroad, and the site's unsafe historic remains and natural hazards.

To provide safe vehicle access to a trailhead and parking site for the Fern Creek Buttress area of the Endless Wall.

To provide safe viewing of Kaymoor from cliff line/rim along the Endless Wall for visitors and to ensure safety of rock climbers below the rim line.

Access

To provide barrier-free access for park visitors to all three levels of the site.

To provide the opportunity to view the gorge and major Kaymoor features from within the visitor transport system.

To provide road access from Kaymoor top to bench level for preservation, operations, and maintenance activities.

To retain emergency medical access routes at the gully upriver of Fern Creek Buttress.

To provide visitor access to Kaymoor viewpoints: barrier free at Canyon Rim and able-bodied access at Fern Creek Buttress.

To provide telescopic viewing aids at overlooks.

To acquire adequate land base to provide parking and trail corridor at Fern Creek Buttress area.

Interpretation

To provide the opportunity for visitors to understand the context of coal mining, coal processing, and lifeways created by the unique geography of the New River Gorge.

To provide first-hand visitor experience of entering a coal mine and seeing a coal seam (if mine entrance can be stabilized and ventilated to ensure public safety).

To provide visitors an understanding of the influence of geography upon coal mining technology in the New River Gorge.

To provide visitors an understanding of natural vegetative recovery processes in the New River Gorge.

To identify the Kaymoor site to Mary Draper Ingles Trail users and inform them of the site's significance.

Visitor Use and Recreation

To provide a nonstrenuous, relatively flat, interesting hiking experience en route to Fern Creek overlooks.

Actions – Alternative 1 (Preferred Alternative)

Preservation Treatment

Stabilize and restore exterior of selected structures and objects.

Structures to be Stabilized:

Kaymoor Top
stairs

Bench Level
two main drift entries near headhouse
superintendent's office/lamphouse (stabilize and reroof)
powder house
cap magazine house

Mid-Level (Slope)
cap house near haulage tracks

Bottom Level
sand house
coke ovens
townsite building foundations
railroad siding
company store ruins
processing plant (restore structure and machinery to nonoperational historical appearance/requires HSR)
power house (restore for artifact storage or stabilize/reroof)

Structures to be Restored:

Bench Level
haulage rails (restore from bench to bottom)
coal car tracks
water tank above bench (restore for fire suppression)
headhouse (nonoperational restoration/requires HSR)
mine entry (to first cross shaft)

Mid-Level (Slope)
two monitors (fix in place on monitor tracks)
monitor incline system (nonoperational historical appearance)
conveyor system (nonoperational historical appearance)

Bottom Level
water tank (restore for fire suppression)
sand house and sand car

Other structures not listed are to be left in situ and allowed to deteriorate if they are not hazardous to visitors. Small artifacts determined to qualify for the park's collection will be retrieved for storage (location to be determined). Kaymoor 1 (bottom) townsite would be left as is. Vegetation would be cleared from Kaymoor siding railroad tracks. The processing plant would be stabilized to allow guided visitor entry.

Public Safety

Conduct a toxic materials survey and clean up site as necessary to ensure public safety.

Take necessary safety measures for mine entry.

Fence the CSX Railroad right-of-way as required to prevent visitor trespass in Kaymoor area (5,000 l.f.).

Request WVDNR to establish a hunting safe zone.

Access

Improve vehicle access to trailhead facility at Kaymoor top (parking for 75 cars and five buses).

Provide river access by establishing boat take-out at Craig Branch and construct trail access to Kaymoor via culvert under the railroad (if CSX permits).

Develop a visitor transport system that would move 10-20 visitors per car load between the three levels at Kaymoor. The system must be a tested safe and reliable system that requires relatively low maintenance and allows good visibility of the site from the transport unit – perhaps a concession-operated system with a nominal fee.

Provide new stairs and/or trails from top of the gorge to the bench level and bottom as emergency and secondary access options.

Improve maintenance vehicle access to the bench level.

Reestablish a railroad siding at Kaymoor bottom for stabilization activity access and possible future visitor access by rail.

Improve Lansing Road (Route 82) to two paved lanes from US 19 to Edmond under FHWA program if possible.

Create a trailhead at Fern Creek with parking for 25 vehicles, restrooms, and a site-orientation wayside.

Establish a barrier-free foot trail from trailhead to Endless Wall overlooks.

Interpretation

Coal/geography/coal processing – waysides, guided walks at overlook.

New River coal stories/lifeways – special AV program and personal services at Canyon Rim visitor center.

Coal mining process - exhibits, waysides, audiovisual, guided tours, brochures, guidebook, audio-oral histories.

Mine experience - self-guided walk, interpretation.

Visitor Facilities

Develop a contact facility at the top of the visitor transport system to provide shelter, a waiting area, simple site orientation, and restrooms.

Provide a sheltered waiting area and restroom at the bottom of the transport system.

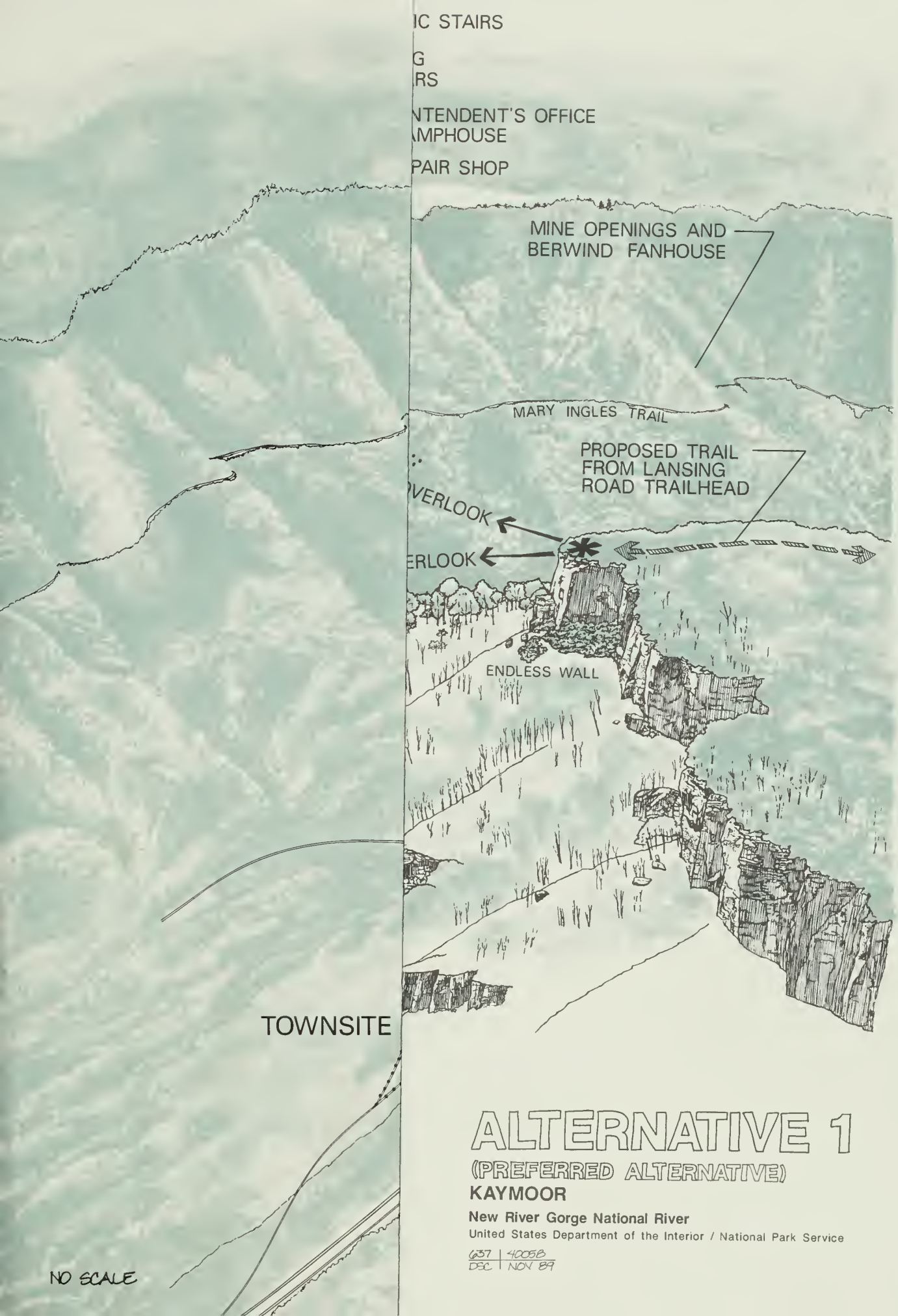
Provide bench level waiting area.

Provide overlook structures at Endless Wall with unobtrusive protective railings, telescopes, and benches.

Remove vegetation that obstructs visibility of these structures.

Land Protection

Acquire lands needed to provide facilities and access.



ALTERNATIVE 1

(PREFERRED ALTERNATIVE)

KAYMOOR

New River Gorge National River

United States Department of the Interior / National Park Service

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DSC | NOV '89

HOIST HOUSE

PROPOSED MECHANICAL TRANSPORT SYSTEM

HISTORIC STAIRS

PARKING
· 75 CARS

SUPERINTENDENT'S OFFICE AND LAMPHOUSE

CAR REPAIR SHOP

KAYMOOR TOP

MINE OPENINGS AND BERWIND FANHOUSE

PROPOSED TRAIL

POWDER HOUSE AND CAP MAGAZINE

MINE OPENINGS

HEADHOUSE

ELECTRICAL SUBSTATION

LOW MOOR FANHOUSE

MARY INGLES TRAIL (MAINTENANCE ACCESS ROAD)

KAYMOOR BENCH

MARY INGLES TRAIL

PROPOSED STAIRS

HAULAGE

PROPOSED TRAIL FROM LANSING ROAD TRAILHEAD

CAP HOUSE

MONITOR

OVERLOOK

PROCESSING PLANT

OVERLOOK

POWER HOUSE

CONVEYOR

TIPPLE

KAYMOOR BOTTOM

ENDLESS WALL

RAILROAD SIDING

COKE OVENS

CSX RAILROAD

PROPOSED TRAIL ACCESS

BOAT LANDING

TOWNSITE

CRAIG BRANCH CULVERT

NEW RIVER

KAYMOOR AREA

NO SCALE

ALTERNATIVE 1

(PREFERRED ALTERNATIVE)

KAYMOOR

New River Gorge National River

United States Department of the Interior / National Park Service

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ALTERNATIVE 2

Preservation Emphasis

Stabilization as a ruin in present condition.

Visitor Experience Emphasis

A physically demanding and intellectually challenging experience that evokes awareness of the difficult challenges this setting imposed on those who worked and lived here, and a sense of loss for a way of life that is no longer viable.

Objectives

Cultural Resources

To stabilize selected facades in roughly their current (but more visible) condition.

Natural Resources

To minimize adverse impacts and provide maximum protection for native vegetation and wildlife.

To protect potential bat habitat in the Kaymoor area.

Public Safety

To provide a safe experience for all visitors free from the dangers associated with hunting, the active railroad, and the site's unsafe historic remains and natural hazards.

Access

To provide able-bodied visitors with the opportunity to explore the entire Kaymoor site on foot, with access from Kaymoor top, the Mary Draper Ingles Trail, and the river.

To improve the road to the Kaymoor top from Salem-Gatewood Road.

To provide safe pedestrian access between the Kaymoor bottom and the New River.

To provide road access from the Kaymoor top to bench level for preservation, operations, and maintenance activities.

Interpretation

To allow visitors to come away with an understanding of the physical difficulties of mining coal and living in the New River Gorge.

Vandalism

To prevent the removal of historic artifacts and damage to historic features from acts of vandalism.

Actions – Alternative 2

Preservation Treatment

Stabilize structures for public safety throughout the site (all levels).

Specific Structures to be Stabilized:

Kaymoor Top
- hoist house
- stairs

Bench Level
- haulage rails
- main drift entries near headhouse
- headhouse
- drift openings near Butcher Branch
- superintendent's office/lamphouse
- Low Moor fan house
- car repair shop
- powder house
- cap magazine house
- monitor
- water tank

Mid-Level (Slope)
- cap house (near haulage tracks)
- two monitors (fix in place on monitor tracks)
- monitor incline system
- conveyor system

Bottom Level
- processing plant
- sand house and sand car
- power house
- coke ovens
- railroad siding to processing plant and coke ovens
- haulage car (relocate to Kaymoor top for display at hoist house)
- company store ruins

Other structures not listed are to be left in situ and allowed to deteriorate if they are not hazardous to visitors. Small artifacts determined to qualify for the park's collection will be retrieved for storage (location to be determined). Site clutter would be retained. Vegetation that threatens stability of ruins and obstructs close-up visibility would be removed.

Public Safety

Conduct a toxic materials survey and clean up site as necessary to ensure public safety.

Fence the CSX Railroad right-of-way as required to prevent visitor trespass in Kaymoor area (5,000 l.f.).

Request WVDNR to establish a hunting safe zone.

Remove Low Moor fan house chimney.

Access

Improve the access road from the Gatewood Road (Route 9) to a new trailhead facility at Kaymoor top with parking for 25 cars.

Improve maintenance vehicle access road to bench level.

Recondition the historic stairs from Kaymoor top to bench level, build new stairs parallel to extant haulage tracks to Kaymoor bottom, and/or provide trail options to all three levels.

Retain secondary access to Kaymoor at the bench level by way of the Mary Draper Ingles Trail.

Provide river access by establishing boat take-out at Craig Branch and construct trail access to Kaymoor via culvert under the railroad (if CSX permits).

Interpretation

Coal mining process – waysides with some HAER drawings, quotations, mine maps, guidebook.

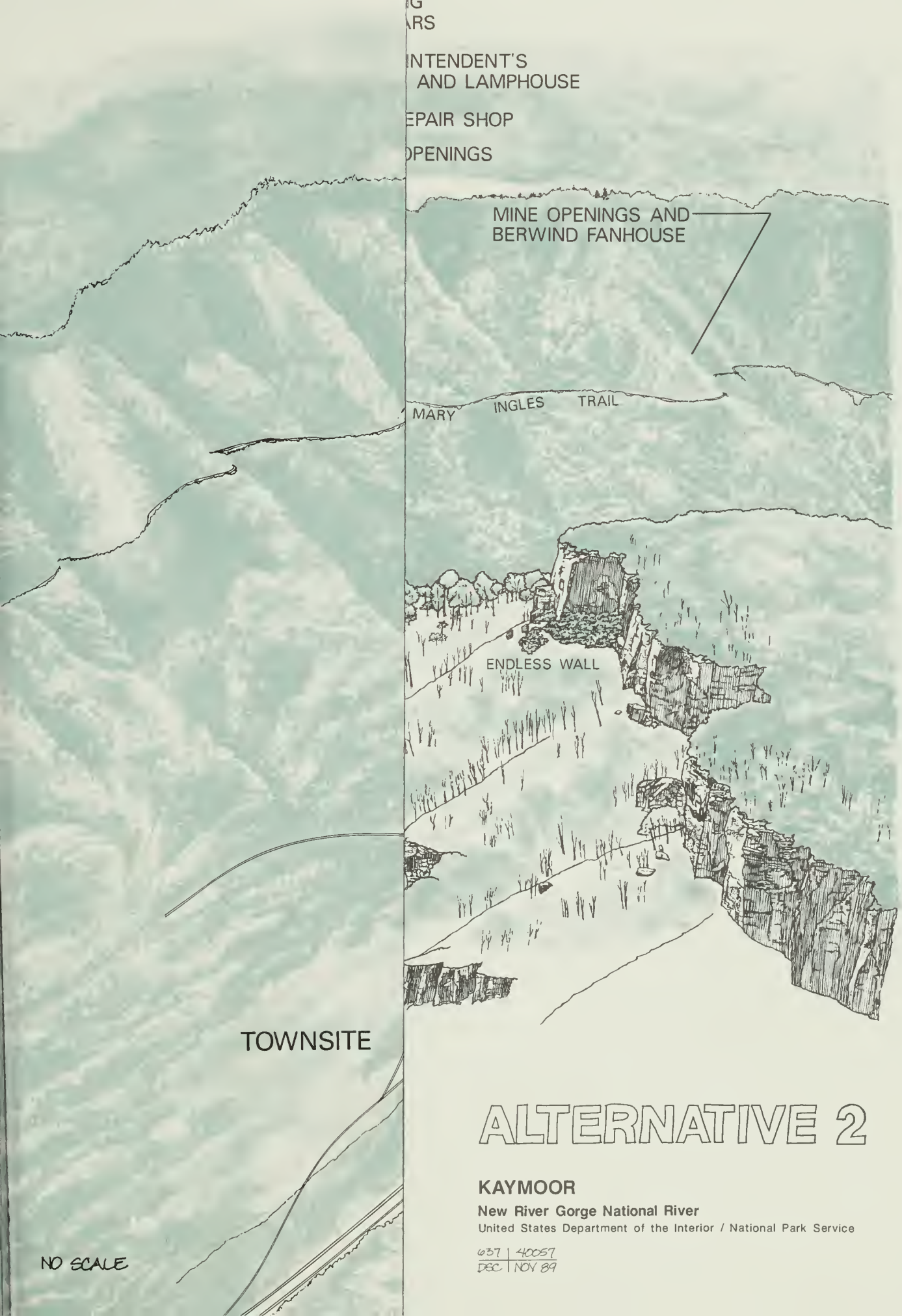
Geography/lifestyle – waysides with some historic photos, quotations, mine maps, guidebook.

Visitor Facilities

Provide restrooms and site orientation wayside at Kaymoor top trailhead.

Land Protection

Acquire acreage needed for trailhead site and access rights.



ALTERNATIVE 2

KAYMOOR

New River Gorge National River

United States Department of the Interior / National Park Service

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HOIST HOUSE

HISTORIC STAIRS

PROPOSED TRAIL

POWDER HOUSE AND CAP HOUSE

KAYMOOR TOP

PARKING
· 25 CARS

SUPERINTENDENT'S OFFICE AND LAMPHOUSE

CAR REPAIR SHOP

MINE OPENINGS

MINE OPENINGS AND BERWIND FANHOUSE

HEADHOUSE

LOW MOOR FANHOUSE

ELECTRICAL SUBSTATION

MARY INGLES TRAIL (MAINTENANCE ACCESS ROAD)

KAYMOOR BENCH

MARY INGLES TRAIL

PROPOSED STAIRS

CAP HOUSE

HAULAGE

PROCESSING PLANT

POWER HOUSE

MONITOR

CONVEYOR

TIPPLE

ENDLESS WALL

KAYMOOR BOTTOM

COKE OVENS

CSX RAILROAD

PROPOSED TRAIL

BOAT LANDING

CRAIG BRANCH CULVERT

NEW RIVER

TOWNSITE

KAYMOOR AREA

NO SCALE

ALTERNATIVE 2

KAYMOOR

New River Gorge National River

United States Department of the Interior / National Park Service

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ALTERNATIVE 3

Preservation Emphasis

Stabilization and clearing of major features for remote visibility and for public safety along the bench level.

Visitor Experience Emphasis

A visual experience of Kaymoor from overlooks across the gorge where Kaymoor is seen as part of the larger gorge landscape and its relative inaccessibility is apparent. The visitor gets a perspective of the relationship between the different parts of the Kaymoor complex. Access to the overlook sites is a moderate hike that offers its own intrinsic pleasures and rewards.

Objectives

Cultural Resources

To make significant extant resources at Kaymoor visible and recognizable from overlooks.

To stabilize structures adjacent to the Mary Draper Ingles Trail (bench level).

Natural Resources

To protect peregrine falcon hacking site and adjacent area from any disturbance.

Public Safety

To provide safe vehicle access to a trailhead and parking site for the Fern Creek Buttress area of the Endless Wall.

To provide safe viewing of Kaymoor from cliff line/rim along the Endless Wall for visitors and to ensure safety of rock climbers below the rim line.

Access

To retain emergency medical access routes at the gully upriver of Fern Creek Buttress.

To provide visitor access to Kaymoor viewpoints; barrier free at Canyon Rim and able-bodied access at Fern Creek Buttress.

To provide road access from Kaymoor top to bench level for preservation, operations, and maintenance activities.

Interpretation

To provide visitors an understanding of influence of geography upon coal mining technology in the New River Gorge.

To provide visitors an understanding of natural vegetative recovery processes in the New River Gorge.

To identify the Kaymoor site to Mary Draper Ingles Trail users and inform them of the site's significance.

Visitor Use and Recreation

To provide a nonstrenuous, relatively flat, interesting hiking experience en route to Fern Creek overlooks.

Actions – Alternative 3

Preservation Treatment

Stabilize and/or ghost major structures visible from Endless Wall overlooks.

Structures to be Stabilized for Visibility:

Kaymoor Top
- hoist house

Bench Level
- headhouse
- superintendent's office/lamphouse
- powder house
- cap magazine house

Mid-Level (Slope)
- conveyor system

Bottom Level
- processing plant
- power house
- coke ovens

Other structures not listed are to be left in situ and allowed to deteriorate if they are not hazardous to visitors. Small artifacts determined to qualify for the park's collections will be retrieved for storage (location to be determined).

Public Safety

Conduct a toxic materials survey and clean up site as necessary to ensure public safety.

Fence the CSX Railroad right-of-way as required to prevent visitor trespass in Kaymoor area (5,000 l.f.).

Request WVDNR to establish a hunting safe zone.

Access

Improve Lansing Road (Route 82) to two paved lanes from US 19 to Edmond under FHWA program if possible.

Create a trailhead at Lansing Road with parking for 25 vehicles, restrooms, and a site-orientation wayside.

Establish a barrier-free foot trail from trailhead to Endless Wall overlooks.

Improve maintenance vehicle access to bench level.

Interpretation

Coal/geography/coal processing – waysides, guided walks at overlook.

New River coal stories/lifeways – special AV program and personal services at Canyon Rim visitor center.

Site identification/coal processing – waysides on Mary Draper Ingles Trail at Kaymoor bench level.

Visitor Facilities

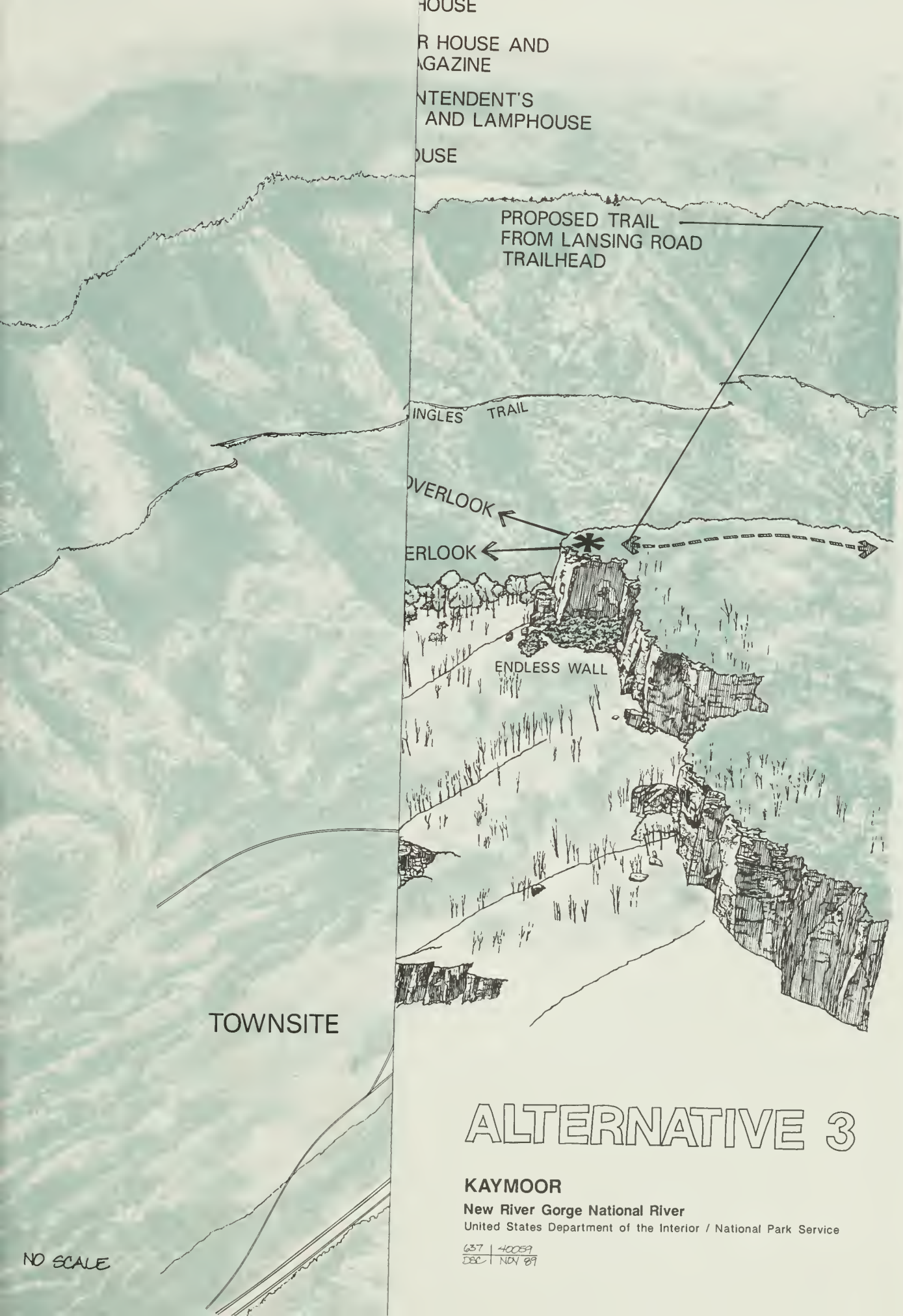
Provide overlook structures at Endless Wall with unobtrusive protective railings, telescopes, and benches.

Remove vegetation that obstructs visibility of these structures.

Provide parking and trail corridor at Fern Creek Buttress area.

Land Protection

Acquire land base necessary to provide these facilities.



ALTERNATIVE 3

KAYMOOR

New River Gorge National River

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POWDER HOUSE AND
CAP MAGAZINE

SUPERINTENDENT'S
OFFICE AND LAMPHOUSE

HEADHOUSE

KAYMOOR TOP

PROPOSED TRAIL
FROM LANSING ROAD
TRAILHEAD

MARY INGLES TRAIL (MAINTENANCE ACCESS ROAD)

KAYMOOR BENCH

MARY INGLES TRAIL

OVERLOOK

OVERLOOK

PROCESSING
PLANT

CONVEYOR

TIPPLE

POWER PLANT

KAYMOOR
BOTTOM

ENDLESS WALL

COKE OVENS

CSX RAILROAD

TOWNSITE

CRAIG BRANCH
CULVERT

NEW RIVER

KAYMOOR AREA

NO SCALE

ALTERNATIVE 3

KAYMOOR

New River Gorge National River

United States Department of the Interior / National Park Service

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ALTERNATIVE 4 – CONTINUATION OF EXISTING CONDITIONS

Preservation Emphasis

Stabilization of structures and site as necessary to protect visitors from hazards as the site continues the process of deterioration.

Visitor Experience Emphasis

A personal discovery experience for Mary Draper Ingles Trail users who will happen upon the ruins of Kaymoor as the forces of nature continue to reclaim the site.

Objectives

Cultural Resources

To allow structural deterioration and natural reclamation of the site to continue.

To establish a research collection of cultural artifacts associated with the Kaymoor site.

Natural Resources

To retain present status.

Public Safety

To eliminate conditions at Kaymoor that are hazardous to hikers on Mary Draper Ingles Trail.

Access

To retain present access to Kaymoor at the bench level only by way of the Mary Draper Ingles Trail.

Interpretation

To interpret coal mining primarily off-site (e.g., Canyon Rim visitor center).

To retain present level of Kaymoor (on-site guided) interpretation, and to provide site identification at Kaymoor.

Actions – Alternative 4

Preservation Treatment

Fence hazardous structures and post signs.

Hazardous Structures at Bench Level:

Low Moor fan house
Berwind fan house
Superintendent's office/lamphouse
Powder house/cap magazine
Car repair shop platform
I-beam/electrical shop

Other structures not listed are to be left in situ and allowed to deteriorate if they are not hazardous to visitors. Small artifacts determined to qualify for the park's collection will be retrieved for storage (location to be determined).

Public Safety

Conduct a toxic materials survey and clean up site as necessary to ensure public safety.

Fence the CSX Railroad right-of-way as required to prevent visitor trespass in Kaymoor area (5,000 l.f.).

Request WVDNR to establish a hunting safe zone.

Access

Continue use of Mary Draper Ingles Trail as access through Kaymoor (no specific Kaymoor trailhead).

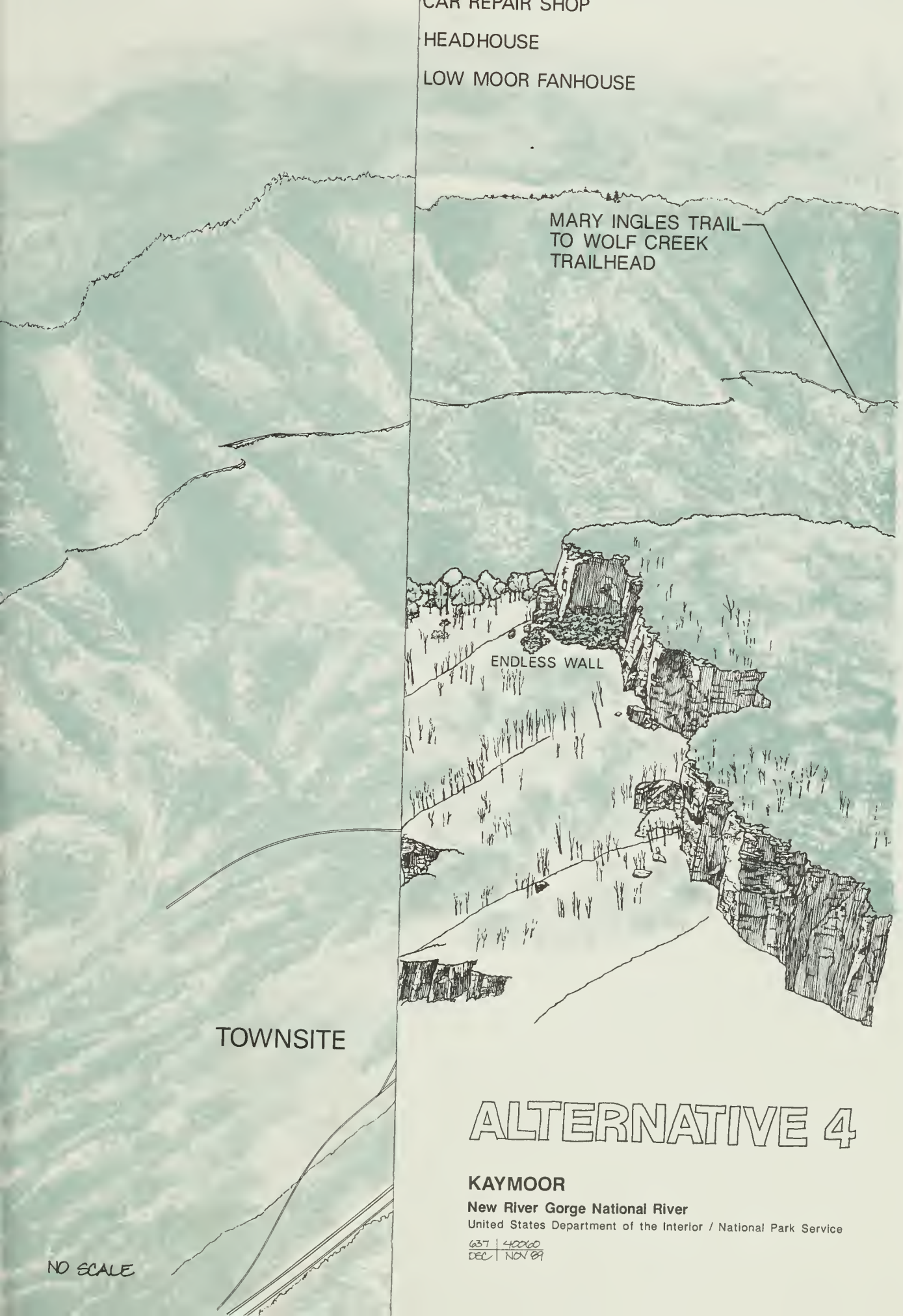
Interpretation

Provide site identification waysides along Mary Draper Ingles Trail.

Continue scheduled guided walks.

Distribute publications at Canyon Rim visitor center.

Produce special AV program on New River coal mining for Canyon Rim visitor center.



ALTERNATIVE 4

KAYMOOR

New River Gorge National River

United States Department of the Interior / National Park Service

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ALTERNATIVE 4

KAYMOOR

New River Gorge National River

United States Department of the Interior / National Park Service

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ESTIMATED DEVELOPMENT COSTS

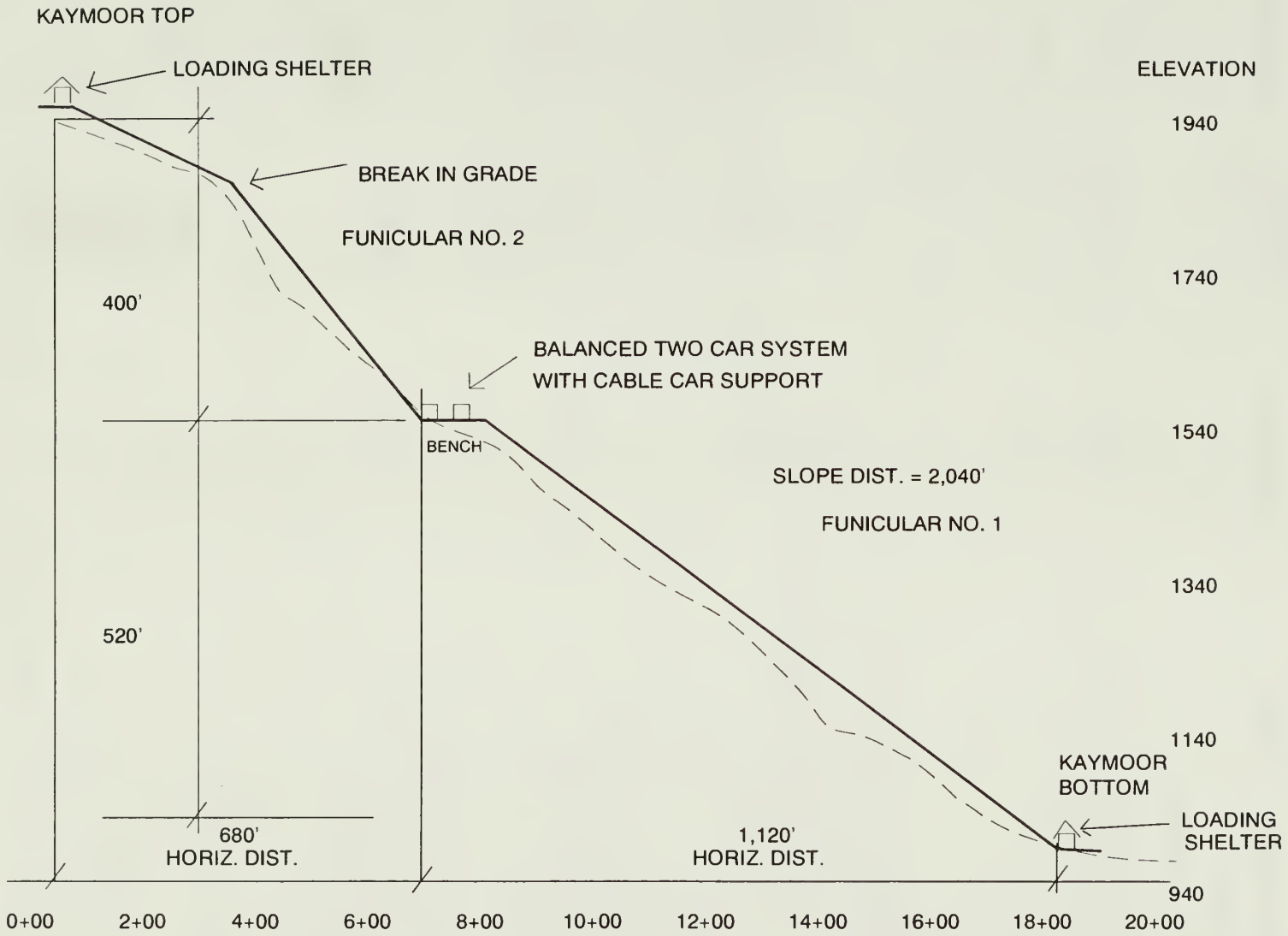
NOTE: The costs given here are Class C estimates and are for comparison of alternatives only.

Development Item and Quantity	Gross Costs	Advance & Proj.Plng. Costs	Total Costs
ALTERNATIVE 1 – PREFERRED ALTERNATIVE			
ROADS AND PARKING			
Improve vehicle access to Kaymoor top:			
Gatewood Road (Rt 9) to trailhead (1.25 mi)	$ 917,000	$175,000	$ 1,092,000
Parking for 75 cars	128,000	25,000	153,000
Parking for 5 buses	30,000	6,000	36,000
Improve maintenance vehicle access road to bench level (4 mi)	1,363,000	260,000	1,623,000
Emergency vehicle access to Kaymoor bottom, specialized service (helicopter pad)	7,000	1,000	8,000
Improve Lansing Road (Rt 82) from one lane to two lanes – US 19 to Edmond (1.5 mi)	1,081,000	206,000	1,287,000
Trailhead parking – Fern Creek (25 cars)	46,000	9,000	55,000
Subtotal			$ 4,254,000
RAIL SIDING			
Reconstruct rail siding at Kaymoor bottom for construction materials and possible future visitor access; include rail platform	$ 40,000	$ 8,000	$ 48,000
TRAILS			
Repair concrete stairs (1,400 lf)	$ 14,000	$ 3,000	$ 17,000
Repair handrails (1,400 lf)	74,000	14,000	88,000
Kaymoor top to bench level – new trail	89,000	17,000	106,000
Bench level to Kaymoor bottom – new stairs (1,166.19 ft)	115,000	22,000	137,000
Pedestrian access at Craig Branch culvert to New River	26,000	5,000	31,000
Barrier-free foot trail to Endless Wall (.75 mi)	45,000	7,000	52,000
Overlooks:			
Stone wall/safety barrier	98,000	19,000	117,000
Clearing (selective)	13,000	3,000	16,000
Telescopes (8)	52,000	10,000	62,000
Benches, wood (3)	5,000	1,000	6,000
Subtotal			$ 632,000
BOAT LANDING ALONG RIVER			
Clearing vegetation (1 acre)	$ 3,000	$ 500	$ 4,000
Grading beach preparation	7,000	1,000	8,000
Subtotal			$ 12,000

Development Item and Quantity	Gross Costs	Advance & Proj.Plng. Costs	Total Costs
SITE STRUCTURES (VISITOR USE)			
Visitor contact/visitor transport system shelter, waiting area, site orientation, and restrooms (6,000 sf)	$1,020,000	$195,000	$ 1,215,000
Bench level waiting area shelter, benches – open air (200 sf)	13,000	2,500	16,000
Kaymoor bottom sheltered waiting area, restrooms (500 sf)	85,000	16,000	101,000
Wayside exhibits	120,000	24,000	144,000
Interpretive media	420,000	90,000	510,000
Kaymoor guidebook	--	--	50,000
Subtotal			$ 2,036,000
VEGETATION CLEARING			
Kaymoor townsite (36 acres)	$ 98,000	$ 19,000	$ 117,000
Kaymoor railroad siding (coke ovens) and Kaymoor bottom (tipple) – 2 acres	5,000	1,000	6,000
Kaymoor haulage (.8 acre)	3,000	500	4,000
Bench mid-level (.3 acre)	8,000	1,500	10,000
Mechanical transport system (40 ft x 1,810 ft)	5,000	1,000	6,000
Kaymoor top (2 acres)	5,000	1,000	6,000
Various structures (1/2 acre ea., 15 structures)	18,000	4,000	22,000
Subtotal			$ 171,000
PUBLIC SAFETY			
Fence CSX RR right-of-way (5,000 lf)	$ 144,000	$ 28,000	$ 172,000
Toxic materials survey (2 people x $50/hr x 80 hrs = $800; $200 per sample x 100 samples = $20,000)	27,510	5,250	33,000
Subtotal			$ 205,000
STABILIZATION OF STRUCTURES			
Bench Level			
Main drift entries near headhouse:			
New protective covering (2) that allows bat entry and protects visitors, concrete wall (20 x 10 x 1/27 (2) = 15 cy)	$ 20,000	$ 4,000	$ 24,000
Superintendent's office/lamphouse:			
Stabilize walls, door headers, etc., 5-man crew plus equipment and materials @ 10 days	8,000	1,500	10,000
Reroof (30 x 20)/100 x 1,000)	8,000	2,000	10,000
Powder house:			
Repaint walls and replace/repair deteriorated wood (5 days)	4,000	1,000	5,000
Cap magazine house:			
Replace roof (2 days)	1,600	300	2,000
Subtotal			$ 51,000

Development Item and Quantity	Gross Costs	Advance & Proj.Plng. Costs	Total Costs
Mid-Level (Slope)			
Cap house near haulage tracks:			
Install new roof to preserve building and stabilize foundation (3 days)	$ 2,400	$ 500	$ 3,000
Bottom Level			
Sand house and sand car:			
Stabilize house (5 days) and fix sand car to track – weld lid shut (1 day)	$ 5,000	$ 1,000	$ 6,000
Coke ovens:			
Complete tree and stump removal (800 x 200 = 4 acres)	63,000	12,000	75,000
Erosion control measures (2 acres)	6,000	1,000	7,000
Do not fill in all coke ovens; rehab 3 ovens for interpretation	13,000	2,500	16,000
Townsite building foundations:			
Original site has 62 ± buildings; assume 30 foundations need restoration and/or stabilization (30 x 20 bldgs)	12,000	2,000	14,000
Railroad siding (150 ft)	40,000	8,000	48,000
Company store ruins:			
Shore walls and stabilize foundations – 10 days (5-man crew)	13,000	2,500	16,000
Processing plant:			
Stabilize from further collapse			
(1) replace failing columns and beams or provide additional support members (60 days)	79,000	15,000	94,000
(2) secure wall siding panels (5 days)	7,000	1,300	9,000
(3) replace/repair roof (20 days)	26,000	5,000	31,000
(4) install security fence (1,000 ft)	53,000	10,000	63,000
(5) close and barricade doorways and windows (10 days)	13,000	2,500	16,000
Power house:			
Stabilize walls			
(1) provide skeleton truss structure (30 days)	40,000	8,000	48,000
(2) remove trees and stumps from building interior (5 days)	7,000	1,300	9,000
(3) repair existing roof (10 days)	13,000	2,500	16,000
(4) barricade doorways for visitor and building protection (5 days)	7,000	1,300	9,000
Subtotal			$ 477,000
STRUCTURES TO BE RESTORED			
Bench Level			
Haulage rails (restore from bench to bottom):			
Replace ties (1,500 ft)	$ 18,000	$ 4,000	$ 22,000
Align/replace rails (500 ft)	33,000	6,000	39,000
Coal car tracks (100 ft)	33,000	6,000	39,000
Water tank above bench:			
Restore for fire suppression			
20,000 gal.+	53,000	10,000	63,000
fire hydrant (3)	12,000	3,000	15,000
2,000 ft 6-in D.I. pipe	92,000	18,000	110,000

Development Item and Quantity	Gross Costs	Advance & Proj.Plng. Costs	Total Costs
Bench Level (cont.)			
Headhouse (nonoperational restoration):			
Ghost frame work with roofing			
400 ft 4-in x 4-in tubing	$ 36,000	$ 7,000	$ 43,000
1,000 ft^2 roof	7,000	1,000	8,000
Mine entry restoration and safety (open to 150 ft)			
Air quality and roof stability evaluation; construct wall at back ($400 x 3,000 sq ft (20 ft x 150 ft) = $1,200,000); air shafts (2) and fan ($500,000)	2,227,000	425,000	2,652,000
Subtotal			$ 2,991,000
Mid-Level (Slope)			
Two monitors (fix in place on monitor tracks)	$ 2,000	$ 300	$ 3,000
Monitor incline system (nonoperational historical appearance)			
1,200 ft - replace ties, rails	79,000	15,000	94,000
Conveyor system (nonoperational historical appearance)			
Replace failing steel beams; replace cover and walkways	30,000	6,000	36,000
Subtotal			$ 133,000
Bottom Level			
Water tank (restore for fire suppression) – 20,000 gal	$ 52,000	$ 10,000	$ 62,000
ACCESS			
Develop a visitor transport system (10-20 visitors) per car between the three levels at Kaymoor.	SEE ATTACHED SKETCH		
Due to the variable terrain and the restriction to have the least visual impact, consider two separate funiculars using cable way for supports. The cables will be set (anchored) to allow cars to be just above snow levels or approximately 4 ft to 50 ft above existing grades.			
In the interest of economy, each funicular will consist of a balanced two-car system.			
2(1,020 lf) = 2,040 lf	$5,345,000	$1,020,000	$ 6,365,000
Total – Alternative 1			**$17,440,000**



NERI Funiculars Sketch

Development Item and Quantity	Gross Costs	Advance & Proj.Plng. Costs	Total Costs
ALTERNATIVE 2			
ROADS AND PARKING			
Improve access road to Kaymoor top – Gatewood Road (Rt 9) to trailhead (1.25 mi)	$865,000	$165,000	$1,030,000
Parking for 25 cars	46,000	9,000	55,000
Improve maintenance and vehicle access road to bench level (4 mi)	1,363,000	260,000	1,623,000
Subtotal			$2,708,000
TRAILS			
Provide pedestrian access (able-bodied) to entire site			
Kaymoor top to bench level – repair concrete stairs	$98,000	$19,000	$ 117,000
Bench level to Kaymoor bottom – new stairs	92,000	18,000	110,000
Pedestrian access at Craig Branch culvert to New River	26,000	5,000	31,000
Foot trails (2,800 lf)	29,000	6,000	35,000
Subtotal			$ 293,000
BOAT LANDING ALONG RIVER			
Clearing vegetation (1 acre)	$ 3,000	$ 500	$ 4,000
Grading beach preparation	7,000	1,000	8,000
Subtotal			$ 12,000
SITE STRUCTURES (VISITOR USE)			
Provide restrooms – Kaymoor top	$119,000	$23,000	$ 142,000
Site orientation waysides – Kaymoor top, bench, bottom	60,000	12,000	72,000
Kaymoor guidebook	--	--	50,000
Subtotal			$ 264,000
VEGETATION CLEARING			
Selective (40 acres)	$629,000	$120,000	$ 749,000
PUBLIC SAFETY			
Fence CSX RR right-of-way (5,000 lf)	144,000	28,000	$ 172,000
Toxic materials survey (2 people x $50/hr x 30 hrs = $300; $200 per sample x 30 samples = $6,000)	9,170	1,750	11,000
Subtotal			$ 183,000

Development Item and Quantity	Gross Costs	Advance & Proj.Plng. Costs	Total Costs
STABILIZATION OF STRUCTURES			
Kaymoor Top			
Hoist house:			
General cleanup and repair			
(1) remove abandoned automobile			
(2) install safety railings			
(3) improve trail to hoist house			
(4) clear vistas			
5-man crew plus equipment and materials @ 40 days	$32,000	$ 6,000	$ 38,000
Erosion control, improve drainage, etc. (10 days)	8,000	2,000	10,000
Stabilize foundations and walls, seal concrete cracks, barricade door openings, etc. (20 days)	16,000	3,000	19,000
Subtotal			$ 67,000
Bench Level			
Haulage rails:			
Stabilize rails and ties by replacing ties and securing rails (1,500 ft), 5-man crew plus equipment and materials @ 8 days	$ 6,300	$1,200	$ 8,000
Erosion control (1,500 ft x 6 ft = 9,000 ft^2)	12,000	2,000	14,000
Main drift entries near headhouse:			
New protective covering (2) that allows bat entry and protects visitors, concrete wall (20 x 10 x 1/27 (2) = 15 cy)	20,000	4,000	24,000
Drift openings near Butcher Branch:			
Secure to prevent entry (8 cy)	10,500	2,000	13,000
Superintendent's office/lamphouse:			
Stabilize walls, door headers, etc. 5-man crew plus equipment and materials @ 10 days	8,000	2,000	10,000
Low Moor fan house:			
Remove concrete fan housing (emergency stabilization underway)			
Stabilize fan house walls from collapsing (10 days)	8,000	2,000	10,000
Car repair shop:			
Improve access and stabilize walls, etc. (10 days)	8,000	2,000	10,000
Powder house:			
Repaint walls and replace/repair deteriorated wood (5 days)	4,000	1,000	5,000
Cap magazine house:			
Replace roof (2 days)	1,600	300	2,000
Monitor:			
Remove rails that are unsafe to public (200 ft) and remove collapsed (10 days)	8,000	2,000	10,000
Water tank:			
Improve trail access for viewing (100 ft)	3,000	500	4,000
Remove climbing ladders, clean up area, etc. to make safe (2 days)	1,600	300	2,000
Subtotal			$ 112,000

Development Item and Quantity	Gross Costs	Advance & Proj.Plng. Costs	Total Costs
Mid-Level (Slope)			
Cap house near haulage tracks:			
Install new roof to preserve building and stabilize foundation (3 days)	$ 2,400	$ 500	$ 3,000
Monitor incline system:			
Fix two monitors in place on monitor tracks (2 days)	1,600	300	2,000
Remove rails or reconstruct rails in place to make safe for public (10 days)	13,000	2,500	16,000
Remove collapsed structures	1,600	300	2,000
Subtotal			$ 23,000
Bottom Level			
Processing plant:			
Stabilize from further collapse			
(1) replace failing columns and beams or provide additional support members (60 days)	$79,000	$15,000	$ 94,000
(2) secure wall siding panels (5 days)	7,000	1,300	9,000
(3) replace/repair roof (20 days)	26,000	5,000	31,000
(4) install security fence (1,000 ft)	53,000	10,000	63,000
(5) close and barricade doorways and windows (10 days)	13,000	2,500	16,000
Sand house and sand car:			
Stabilize house (5 days) and fix sand car to track, weld lid shut (1 day)	5,000	1,000	6,000
Power house:			
Stabilize walls			
(1) provide skeleton truss structure (30 days)	40,000	8,000	48,000
(2) remove trees and stumps from building interior (5 days)	7,000	1,300	9,000
(3) repair existing roof (10 days)	13,000	2,500	16,000
(4) barricade doorways for visitor and building protection (5 days)	7,000	1,300	9,000
Coke ovens:			
Complete tree and stump removal (800 x 200 = 4 acres)	63,000	12,000	75,000
Erosion control measures (2 acres)	6,000	1,000	7,000
Fill in all coke ovens from top with sand to preserve (10 days)	13,000	2,500	16,000
Railroad siding – processing plant and and coke ovens			
Reconstruct siding by RR	40,000	7,500	48,000
Construct unloading dock (5 days)	7,000	1,300	9,000
Haulage car – relocate			
Haul out on railroad car, then transport by truck to Kaymoor top (2 days)	1,600	300	2,000
Company store ruins			
Shore walls and stabilize foundations (10 days, 5-man crew)	13,000	2,500	16,000
Subtotal			$ 474,000
Total – Alternative 2			**$4,885,000**

Development Item and Quantity	Gross Costs	Advance & Proj.Plng. Costs	Total Costs
ALTERNATIVE 3			
ROADS AND PARKING			
Improve Lansing Road (Rt. 82) from one lane to two lanes – US 19 to Edmond (1.5 mi)	$1,081,000	$206,000	$1,287,000
Trailhead parking – Fern Creek (25 cars)	46,000	9,000	55,000
Improve maintenance vehicle access road to bench level	1,363,000	260,000	1,623,000
Subtotal			$2,965,000
TRAILS			
Barrier-free foot trail to Endless Wall (.75 mi)	$ 45,000	$ 7,000	$ 52,000
Overlooks			
Stone wall/safety barrier	98,000	19,000	117,000
Clearing (selective)	13,000	3,000	16,000
Telescopes (8)	52,000	10,000	62,000
Benches, wood (3)	5,000	1,000	6,000
Subtotal			$ 253,000
SITE STRUCTURES (VISITOR USE)			
Restrooms (std. 400 sf)	$ 118,000	$ 23,000	$ 141,000
Utilities			
Electrical	7,000	2,000	9,000
Water well	40,000	8,000	48,000
Sewer/septic	20,000	4,000	24,000
Wayside exhibits	42,000	8,000	50,000
Kaymoor guidebook	--	--	50,000
Subtotal			$ 322,000
VEGETATION CLEARING			
Trailwork	$ 9,000	$ 28,000	$ 37,000
Parking	13,000	3,000	16,000
Overlooks	7,000	2,000	9,000
Kaymoor structures (40 acres)	629,000	120,000	749,000
Subtotal			$ 811,000
PUBLIC SAFETY			
Toxic materials survey (2 people x $50/hr x 30 hrs = $300; $200 per sample x 30 samples = $6,000	$ 9,170	$ 1,750	$ 11,000

Development Item and Quantity	Gross Costs	Advance & Proj.Plng. Costs	Total Costs
STABILIZATION/GHOSTING OF STRUCTURES			
Kaymoor Top			
Hoist house (ghost)	$ 47,000	$ 9,000	$ 56,000
Bench Level			
Headhouse	$ 63,000	$ 12,000	$ 75,000
Superintendent's office/lamphouse	32,000	6,000	38,000
Powder house	4,000	1,000	5,000
Cap magazine house	1,600	300	2,000
Subtotal			$ 120,000
Mid-Level			
Conveyor system (300 ft)	$ 16,000	$ 3,000	$ 19,000
Bottom Level			
Processing plant	$ 180,000	$ 34,000	$ 214,000
Power house	66,000	13,000	79,000
Coke ovens	82,000	16,000	98,000
Subtotal			$ 391,000
Canyon Rim Visitor Center			
"Coal Mining" film	$ 200,000	$ 25,000	$ 225,000
Total – Alternative 3			**$5,173,000**

Costs Unknown for Following Items:
- Toxic materials survey
- Utilities
- Staffing

Development Item and Quantity	Gross Costs	Advance & Proj.Plng. Costs	Total Costs
ALTERNATIVE 4 (CONTINUATION OF EXISTING CONDITIONS)			
ROADS			
Retain present status	NC		
TRAILS			
Retain present status	NC		
Improvements to Mary Draper Ingles Trail (7,000 lf)	$ 92,000	$18,000	$ 110,000
INTERPRETATION			
Trailside interpretation (5 exhibits)	$ 33,000	$ 7,000	$ 40,000
Kaymoor guidebook	--	--	50,000
Canyon Rim Visitor Center "coal mining" film	200,000	25,000	225,000
Subtotal			$ 315,000
VEGETATION CLEARING			
Retain present status	NC		
PRESERVATION TREATMENT			
Fence hazardous structures and post signs			
Bench Level			
Low Moor fan house	$ 5,000	$ 1,000	$ 6,000
Berwind fan house	7,000	2,000	9,000
Superintendent's office/lamphouse	5,000	1,000	6,000
Powder house/cap magazine	6,000	1,000	7,000
Car repair shop platform	7,000	2,000	9,000
I-beam/electrical shop	37,000	7,000	44,000
Subtotal			$ 81,000
PUBLIC SAFETY			
Fence CSX right-of-way (5,000 lf)	$ 144,000	$ 28,000	$ 172,000
Total – Alternative 4			**$ 678,000**

ESTIMATED MAINTENANCE COSTS

ALTERNATIVE 1

Transport system (estimate based on information supplied by JNEM in St. Louis, Missouri)

Operation of transport system	
1 Electrician foreman (WS-10) and 5 electricians (WG-10)	$ 290,000
Utilities	92,000
Inspections (Otis Elevator)	
Supplies and materials	300,000
Parts and support equipment	116,000
Subtotal	$ 798,000
Kaymoor transport system maintenance	$1,000,000
Visitor center	
2 Maintenance workers (WG-5)	63,000
Supplies and materials	15,000
Utilities (sewage/water/gas/electricity)	6,000
Subtotal	$ 84,000
Comfort stations (2)	
2 Maintenance workers (WG-5)	$ 63,000
Supplies and materials	15,000
Utilities	3,000
Subtotal	$ 81,000
Vehicles	$ 18,000
Total	$1,981,000

NOTE: This estimate does not include start up equipment costs or the need for two maintenance structures – one at the top and one at the bottom.

ALTERNATIVE 2

Vegetation control around historic ruins and along 1 mile of fence	
1 Maintenance worker (WG-5)	$ 32,000
Supplies and materials	5,000
Subtotal	$ 37,000
Orientation center and restroom, Kaymoor top	
1 Maintenance worker (WG-5)	$32,000
Supplies and materials	10,000
Subtotal	$ 42,000
Road maintenance	
Part-time engineering equipment operator, part-time maintenance worker, and supplies and materials	$ 44,000
Vehicles	$ 9,000
Total	**$132,000**

ALTERNATIVE 3

Roads/parking areas	
1 Engineering equipment operator (WG-10)	$ 38,000
1 Maintenance worker (WG-7)	34,000
Supplies and materials	15,000
Subtotal	$ 87,000
Trails and grounds maintenance	
2 Maintenance workers (WG-5)	$ 63,000
Supplies and materials	6,000
Subtotal	$ 69,000
Vehicles	$ 10,000
Total	**$166,000**

ALTERNATIVE 4

Trail maintenance	
Part-time maintenance worker (WG-5)	$20,000
Supplies and materials	4,000
Subtotal	$24,000
Vehicles	$ 1,000
Total	**$25,000**

STAFFING REQUIREMENTS

PROTECTION DIVISION

Alternative 1

Safety oversite and inspection, resource protection, law enforcement, traffic control
Top (2.0 MY)
Safety oversite and inspection, law enforcement, EMS/SAR
Mid-level (2.0 MY)
Safety, protection, law enforcement, EMS/SAR
Bottom (2.0 MY)
Safety, protection, traffic control, law enforcement, EMS/SAR
Endless Wall (1.5 MY)
Surface mining reclamation specialist (series 1801), GS-12 (.5 MY)

Due to expected heavy visitation, protection operations will be heavily affected year-round. Operations at Endless Wall should be somewhat seasonal, but EMS/SAR incidents here could be significant. With the expected heavy visitation EMS/SAR incidents throughout the Kaymoor project could be extremely heavy, thus increasing the staffing requirements even higher than projected.

A surface mining reclamation specialist is required by the Mine Safety and Health Administration to check air quality and mine safety daily before anyone is allowed into the mine.

Alternative 2

Safety, protection, traffic control, law enforcement
Top (0.8 MY)
Safety, protection, law enforcement, EMS/SAR
Mid-level (0.8 MY)
Bottom (0.8 MY)

Alternative 3

Safety, protection, law enforcement, EMS/SAR
Top (0.8 MY)
Mid-level (0.8 MY)
Bottom (0.8 MY)
Endless Wall (2.0 MY)

As in alternative 2 protection requirements are the same for top, middle, and bottom levels. Endless Wall could get heavy visitation. EMS/SAR and other protection incidents could be heavy, requiring at least 2 MY of visitor protection personnel as in alternative 1.

Alternative 4

Top (0.2 my)
Mid-level (0.3 MY)
Bottom (0.3 MY)

NATURAL RESOURCES DIVISION

Alternative 1

Kudzu removal and control (2.0 MY)	$40,000 to $45,000
1 Vehicle	$ 3,600

Alternatives 2 through 4

No staffing required

INTERPRETATION DIVISION

Alternative 1

Personal services at all three levels - mid-April/end October – GS-5 minimum
- Orientation – Top (1.6 MY)
- Orientation/interpretation/safety and protection of resources – Middle (1.8 MY)
- Bottom (1.8 MY)

The complexity of the operation with large numbers of visitors expected, significant safety hazards and resources (cultural and natural) affected by such numbers requires controlled public access via guided tour and protection from steep slope, structural hazards, and railroad mainline.

Endless Wall – Because of safety hazards, congestion is likely in limited space. Probably need personal services during May-October
- Roving contact – GS-5 minimum (0.8 MY)
- Curatorial management artifacts – permanent GS-5/7 curator (1.0 MY)

Alternative 2

Guided interpretive walks to bench level and possibly bottom level during visitor season
- Roving contact Tuesday through Thursday – GS-5 minimum (2.2 MY)
- Curatorial management artifacts – permanent GS-5/7 curator (1.0 MY)

Alternative 3

Endless Wall - same as alternative 1 – GS-5 (0.8 MY)

Alternative 4

Curatorial management artifacts research collection – GS-5/7 curator (1.0 MY)

SUMMARY OF MAJOR IMPACTS OF ACTION ALTERNATIVES

The alternatives differ primarily in the extent of site development and the degree of access to the Kaymoor site. Alternative 1 (preferred alternative) would provide the greatest level of access to and development of the Kaymoor site and the most extensive interpretation of the site. It would also have more impacts on natural resources and a significantly greater cost than other alternatives. Alternative 2 provides a moderate level of access to and interpretation of Kaymoor. Impacts on natural resources under alternative 2 are less extensive than under alternative 1 and greater than under alternative 3. Alternative 3 does not provide new visitor access or improve existing visitor access to the Kaymoor site. This alternative would provide a very different visitor experience because the Kaymoor setting rather than the site itself would be featured. The costs of implementing alternative 3 are less than those for alternative 2; compared to the cost of alternative 1, the costs of alternatives 2 and 3 are more or less comparable. Alternative 4 (continuation of existing conditions) would provide the least access to and interpretation of Kaymoor, would have the least impacts on natural resources, and would cost the least of all the alternatives.

Site Access and Development

Alternatives 1, 2, and 4 would allow visitor access to the Kaymoor site. The degree of access and the amount of development required to provide that access vary among the alternatives. Alternative 1 would provide full access to all levels for all users, including disabled visitors, via a mechanical transport system. Alternative 2 would improve the existing access from Kaymoor top, either through reconditioning the historic stairs, constructing new stairs parallel to the extant haulage, and/or through trail construction options to all three levels. Minor improvements in access would be made under alternative 4, which would use the existing Mary Ingles Trail at bench level as the only access to the site.

The degree of access to the site itself is reflected in the amount of construction for overall site development. A new trailhead facility with parking at Kaymoor top would be developed under alternatives 1 and 2. Alternative 1 involves the greatest development of any alternative. The visitor contact facilities at the trailhead would include a shelter, a waiting area, restrooms, site orientation, and a 75-car, 5-bus parking lot. A railroad siding at the bottom would be reestablished for stabilization access, with the potential of future visitor access by rail. A stairway to all three levels would be constructed for emergency and secondary access. An emergency-access helicopter pad would be constructed at Kaymoor bottom. Visitor facilities would be provided at the bench level and the bottom, as well as at Kaymoor top. The trailhead parking area for alternative 2 would accommodate 25 cars, and would provide the only visitor facilities (restrooms and site orientation) at the site. Both alternatives 1 and 2 would require improvement of the Gatewood Road (Route 9) access road to the trailhead facility. Traffic would increase. Maintenance vehicle access at the bench level would need improvement under both alternatives. Alternatives 1 and 2 also call for development of a boat take-out at Craig Branch and construction of a trail access through the culvert under the railroad, if CSX permits.

Alternative 1 calls for widening Lansing Road (Route 82) to two lanes, providing a trailhead in the Fern Creek area with parking for 25 cars, restrooms, and site-orientation wayside, and providing a barrier-free trail from the trailhead to the Endless Wall overlooks.

Alternative 3 also allows viewing of Kaymoor from an overlook across the gorge but does not provide for additional visitor access to the site itself. The maintenance access road to the bench level would be improved as under alternatives 1 and 2. As in alternative 1, a barrier-free trail would be constructed from the trailhead to the overlook. The trailhead would involve the same level of development as alternative 1 (parking for 25 cars, restrooms, and site-orientation wayside). The Lansing Road (Route 82) access to the trailhead would have to be widened to two paved lanes. Traffic would increase but not to the same degree as in alternatives 1 and 2.

Natural Resources

Alternative 1 would have the greatest impacts on natural resources (primarily soil and vegetation disturbance) because it involves the greatest amount of development required to construct two trailheads (a 75-car parking area and a 25-car parking area), visitor facilities at three levels, a mechanical transport system, access at all three levels, and improvement of Lansing Road. The estimated area to be disturbed at Kaymoor under alternative 1, including vegetation removal around structures but not including the improvements to the Gateway Road access road, would be about 57 acres. The total area of disturbance at Kaymoor under alternative 2 is about 50 acres. Removal of overstory vegetation at the Kaymoor site would be greatest under alternative 3 to allow viewing from the opposite rim of the gorge, but the total amount of vegetation disturbed (about 40 acres) would be the same as under alternative 2 but less than under alternative 1 (about 49 acres). Both alternatives 1 and 2 would require removal of 1 acre of riparian vegetation for construction of a boat take-out. Impacts under alternative 3 resulting from construction of a trailhead and parking area would be approximately the same as those under alternatives 1 and 2 (about 0.5 acre). Construction of the trailhead and 75-car parking area for alternative 1 would affect an area almost three times as large as that proposed under alternatives 2 and 3. Alternative 4 would have the least impacts on natural resources because it involves no new development.

Long-term impacts on the quality of wildlife habitat at the Kaymoor site would be greater under alternative 1 than alternatives 2 and 4 because of greater development and a subsequent increase in visitation. Implementation of alternative 3 would slightly decrease wildlife habitat quality in the vicinity of the trailhead and overlook because of increased visitation.

Alternatives 1 and 3 could have adverse impacts on the peregrine falcon hacking site from development of an overlook on the rim of the gorge, depending on how close the trail and overlook are to the hacking site. Development of the trail could result in minor impacts on wetland vegetation, depending on the location of the trail and the design of stream crossings.

Visitor Experience

Visitors would have the most complete experience and detailed understanding of the Kaymoor site under alternative 1. Under this alternative, at least 13 structures or groups of structures would be stabilized, 9 structures or systems would have exteriors restored, and 4 structures would be ghosted (re-creation of skeletal outline). Alternative 1 is the only alternative that would feature entry into the coal mine. Interpretation under alternative 1 would be oriented towards actual visitor contact on-site. The other alternatives would rely primarily on wayside exhibits and written materials.

Alternative 2 would provide interpretation of the Kaymoor site through wayside exhibits. A total of 21 selected structures would be stabilized, but no exterior restoration or ghosting would occur.

Alternative 3 would emphasize the relationship between the geography of the gorge and the Kaymoor site, but visitors who wanted to see Kaymoor close-up would have to travel to the opposite side of the gorge and access the site via the Mary Ingles Trail. Nine structures or systems would be stabilized. The visitor would gain some understanding of life in a New River gorge coal town but would not appreciate the actual process of mining or life at Kaymoor to the same degree as under alternatives 1 or 2.

Alternative 4 would de-emphasize the importance of the Kaymoor site by allowing the structures to deteriorate. Seven hazardous structures, all at bench level, would be fenced. Initially, the visitor experience would be maintained through the existing level of on-site guided tours. As the buildings deteriorated, visitors would appreciate the Kaymoor story less. Kaymoor would cease to be a destination for visitors seeking to understand coal mining in the New River area.

Visitation to the site is expected to increase substantially under alternative 1 and moderately under alternative 2. Visitor use of the trail and the overlook opposite Kaymoor (alternative 3) would increase over the present levels of use, but the amount of increase is unknown.

Cultural Resources

Alternative 1 would offer the highest level of preservation of cultural resources of any alternative. Under alternative 2, significant cultural resources would be stabilized and other structures would be allowed to deteriorate or be removed for visitor safety. Alternative 3 would require less stabilization than alternative 2 because the structures to be stabilized would be those visible from the opposite canyon rim rather than from the site itself. Under alternative 4, the site would be documented and then allowed to revert back to its natural setting.

IMPACTS COMMON TO ALL ACTION ALTERNATIVES

Landownership

All land acquisition would be in compliance with current regulations and NPS policies.

Topography/Soils

Soils in the Kaymoor area were previously disturbed by on-site historical activities. Soils in construction zones would be trampled and compacted by construction equipment and personnel. Soil horizons would be mixed wherever soils are disturbed.

Erosion of disturbed soils and subsequent runoff would increase until natural and assisted revegetation occurred. Standard mitigating measures, such as sediment traps and erosion control blankets, would be used to minimize the impacts from erosion and runoff.

Soils would be graded, with some cut and fill possible, for improvement of the access road to a new trailhead at the top of the gorge, and for improvement of the maintenance/emergency access road to the bench level. Construction of parking areas would require grading and leveling and possibly fill. Any borrow material necessary would come from a source approved by the park, and any excess fill material would be disposed of at a place approved by the park.

No prime agricultural lands would be affected by any of the alternatives.

Air Quality

There would be a temporary decrease in air quality due to dust stirred up by soil-disturbing activities and fumes from construction equipment. However, the impact would be minor because the site is relatively damp.

The state of West Virginia and NPS air quality standards would be met. Mitigation such as water sprinkling to reduce dust would be used if air quality was threatened.

Water Quality

Minor temporary decreases in water quality would be caused by runoff from unrevegetated soils into creeks and the river. Standard mitigating measures such as sediment traps would be used to prevent significant short-term deterioration of water quality during construction. No long-term impacts on water quality are anticipated under any of the alternatives.

The state of West Virginia water quality standards would be met. The WVDNR would be consulted if the alternative chosen involved any significant degree of earth disturbance. A field review with the WVDNR water resources nonpoint source coordinator might be necessary to determine whether a sediment and erosion control plan would be required.

Floodplains/Wetlands

None of the alternatives would modify or encourage, directly or indirectly, permanent occupation in the floodplain. No new facilities would be located in the 100-year floodplain, except for a boat take-out. This facility is excepted from compliance with Executive Order 11988 ("Floodplain Management") because a boat take-out is a water-dependent action. The Craig Branch tunnel proposed for access to Kaymoor from the river under alternatives 1 and 2 is excepted from compliance with EO 11988 because it is water-dependent, and there is no site for a river access out of the floodplain.

Although there are no wetlands as identified by the USFWS in the project area, portions of the Fern Creek area and the riverbanks may be classified as wetlands under the definitions in the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (U.S. Army Corps of Engineers et al. 1989). If an alternative was chosen that might involve filling of any of these potential wetlands (alternatives 1, 2, or 3), consultation with the USFWS and the U.S. Army Corps of Engineers would be necessary to determine whether or not a 404 permit was required.

Vegetation

Stabilization of historic structures and visual clearing around structures would require removal of vegetation. Poison ivy and kudzu would be controlled by mechanical clearing or use of herbicides approved by the park. Any vegetation control would be in accordance with the integrated pest management policy of the National Park Service. Visitor education about poison ivy would be necessary. No major impacts on riparian vegetation would be anticipated.

Wildlife

There would be temporary disturbance to animals on the construction site caused by equipment and personnel. The majority of animals are mobile enough to avoid any significant adverse impacts.

Hunting pressure on those species open to taking, as described in the "Description of the Environment" section, is not anticipated to cause severe adverse impacts on the population of those species. Use of lead shot might have adverse impacts on the health of those species that might ingest shot; impacts should be minimal because there is low use of the area for hunting involving lead shot.

Threatened, Endangered, and Rare Species

No adverse impacts on any federally listed or proposed threatened, endangered, or candidate species, or any

species considered sensitive by the WVDNR are anticipated as a result of implementation of any of the alternatives, based on the results of previous surveys. However, a site should be searched for threatened, endangered, or rare species prior to construction to ensure that no rare species have colonized the area, particularly the mine portals and the structures since the last survey. Clearances from the USFWS would be obtained before any alternative was implemented.

Visual Quality/Aesthetics

The design of new facilities (restrooms, visitor information kiosks, waiting facilities, mechanical conveyance) would be of the highest aesthetic and functional quality. New facilities would harmonize with the landscape and historic structures. Energy would be conserved through careful site orientation and use of energy-efficient technology. New electric and telephone lines would be installed underground.

There would be short-term adverse impacts on the general visual quality of the site during construction activities.

Visitor Use/Park Operations

Increased trespass on private land and vandalism that could occur as a result of development would be minimized by increased law enforcement and a visitor education system.

Stabilization and interpretation of Kaymoor would be a beneficial use of the area. Visitation would be expected to increase with any alternative that increased development, and in turn, heightened opportunities for interpreting the natural environment and the relationship of Kaymoor to that environment.

Any trails constructed or improved so that access into the gorge would be easier might be used by some for fishing and hunting access.

Public safety would be ensured through a number of actions. If hazardous materials were discovered through a survey, an EPA-approved cleanup would occur. Under those alternatives that would encourage visitation to all levels of Kaymoor, the CSX Railroad right-of-way would be fenced to prevent visitor trespass and potential injury to visitors. Visitors would be warned, through signs and/or personal interpretation, about natural hazards inherent to the site (steep terrain, the river, poison ivy, poisonous snakes) and man-made hazards (railroad, unstable buildings, coal mine entrance).

Conflicts between visitors and hunters have a potential to cause serious adverse impacts on safety. The spring and fall hunting seasons are not the high visitor use season, and most conflicts would be avoided. Human activity and noise on the site would tend to cause animals to avoid the site, and the area would become a less desirable hunting area. Some NPS action such as warning signs would be necessary to protect visitors from hunting activities. Through consultation with the WVDNR, it might be possible to have a small area around the Kaymoor site designated a safe zone where no hunting would be allowed.

A maintenance vehicle access road at bench level would improve the site's caretaking ability and potential emergency access and egress.

No actions are proposed that would adversely affect visitor use of river or commercial river uses. Those alternatives that allow access to Kaymoor from the river would improve the experience of river users who stop to visit the site.

IMPACTS OF ALTERNATIVE 1 – PREFERRED ALTERNATIVE

Impacts on visitors and the natural environment would result from the following actions:

improvement of 1.25 miles of the access road from Gatewood Road

construction of a 75-car, 5-bus parking area and visitor facilities on top

construction of a mechanical transport system

construction of visitor facilities at the bench level and Kaymoor bottom adjacent to the transport system

construction of a foot trail to all levels of the site for secondary access

improvement of 4 miles of maintenance vehicle access to the bench level

removal of vegetation from structures, the Kaymoor bottom townsite, and the Kaymoor siding

reconstruction of the Kaymoor railroad siding

construction of an emergency service helicopter pad at Kaymoor bottom

construction of a boat take-out and site access through the Craig Branch tunnel

improvement of 1.5 miles of Lansing Road (Route 82) access to Fern Creek

construction of a trailhead at Fern Creek with parking and visitor facilities

construction of a barrier-free foot trail along Fern Creek to the rim of the gorge

construction of overlooks at the rim of the gorge, including a viewpoint at Canyon Rim visitor center

Landownership

The National Park Service would need to acquire enough land to build a 75-car, 5-bus parking area at the top and a 25-car parking area and trailhead at Fern Creek, and would also have to acquire access rights under the railroad through the Craig Branch tunnel.

Topography/Soils

Approximately 8.5 acres of soils, most of which are previously disturbed, would be affected for construction of a trailhead and parking area for 75 cars and 5 buses and a trailhead and 25-car parking area, improvement of the main access and the maintenance/emergency access to bench level, construction of an emergency access helipad, and construction of a foot trail. Approximately 1 acre of soil would be affected by construction of a boat take-out.

Approximately 0.5 acre of soils would be disturbed to build the mechanical conveyance and visitor access points at the top, bench, and bottom levels.

Large-scale ground disturbance and vegetation removal would increase the chance for runoff, erosion, and slope failure. Measures would be taken to minimize erosion and slope failure until revegetation and slope stabilization could occur. If a large amount of topsoil was removed, it should be stored for use in revegetation or landscaping later to prevent bringing unwanted exotic plant material to the site in imported topsoil.

Improvement of the Lansing Road (Route 82) access would require grading and possibly some cut and fill to widen it to NPS standards. The addition of 1.5 miles of a second lane would affect approximately 2.7 acres of soils.

The existing climbers' trail along Fern Creek would require major improvement to make it barrier-free in accordance with NPS trail standards and federal accessibility standards. Such improvement would affect topography and soils in the immediate area of the trail to a substantial degree. Such a trail is estimated to be 5 feet wide and 0.75 mile long for a total disturbed area of at least 19,800 square feet (0.45 acre). About 10,600 square feet

of that is already disturbed by the current trail.

Construction of overlooks from the rim would require grading and leveling of soils and/or drilling into rock for supports.

Air Quality

Short-term construction impacts on air quality caused by dust and fumes would be greatest under this alternative because more construction would occur.

There would be a permanent increase of emissions into the air from the mechanical transport system if it was powered by fossil fuel. The transport system would meet all applicable state and federal air quality regulations and emission standards. There would be temporary but recurring minor decreases in air quality when the parking area was heavily used. Adverse impacts would be greatest during the high visitation season, but the effects on air quality from these sources should not be significant. The total amount of emissions cannot be determined at this time.

There would be minor, localized, short-term adverse impacts on air quality caused by dust and fumes from equipment during trailhead, parking area, visitor facility, and rim overlook construction, and during improvement of the Lansing Road access. There would be similar impacts during construction of the maintenance access road at Kaymoor bench level.

When the Fern Creek trailhead parking area was heavily used, temporary but recurring minor decreases in air quality would be caused by automobile emissions.

Water Quality

Although more construction would be undertaken under alternative 1, no long-term adverse impacts are anticipated. A minor short-term increase in water turbidity is anticipated due to erosion and runoff from bare soils before revegetation.

There would be minor, short-term adverse impacts from trail construction on Fern Creek from runoff where two stream crossings are constructed and where the trail runs adjacent to the creek. Sediment traps and soil erosion control blankets would be used to mitigate adverse water quality impacts due to erosion and runoff of turbid, silt-laden water from unrevegetated soils into the stream.

Floodplains/Wetlands

There would be no effect on the New River floodplain under this alternative.

Although not officially designated a wetland, portions of the area immediately adjacent to Fern Creek probably meet the definition of wetland (see the discussion on wetlands in the "Impacts Common to All Action Alternatives" section) during wet periods. No adverse impacts would be permitted, and a net loss of wetlands would be avoided. Stream crossings would be designed to avoid impacts on either the creek or adjacent wet areas. Crossings would be wide enough to completely span the creek without the abutments creating a constriction of the flow channel.

Vegetation

Approximately 8 acres of vegetation would be disturbed for construction of access roads, a foot trail, and a parking area and trailhead facilities at Kaymoor top. Construction of a boat take-out would affect about 1 acre of riparian vegetation. Clearing around structures would affect approximately 48.6 acres of vegetation. Approximately 1.7 acres of vegetation, including large mature trees, would have to be removed to construct a visitor transport system to all levels of the Kaymoor site.

About 0.5 acre of vegetation would be cleared to construct a trailhead with restrooms and a parking area (Fern Creek). Some mature trees would be removed. About 0.25 acre of vegetation would be cleared for trail improvements.

Trees identified as hazard trees would be removed from around the trailhead and along the trail.

Wildlife

The degree of disturbance in this alternative would be greater than any of the other alternatives because the visitor transport system would allow access to a greater number of people and because the system would be noisy. Human presence in the gorge would decrease habitat suitability for species intolerant of disturbance. Intolerant species would tend to avoid the site when people were present and the conveyance was operating but would occupy the site at other times. Under this alternative, a total of 57 acres of forest habitat and 1 acre of riparian habitat would be lost.

Preparation of the mine for visitor access would disturb any bats roosting there. That part of the mine accessible to visitors would not be used by bats as a day roost but would probably continue to be used as a night roost during foraging.

Threatened, Endangered, and Rare Species

Building sites would be searched for the presence of rare species such as salamanders and wood rats before construction. These species could be relocated if they were present in an area that would be affected by construction. The mine would be surveyed for the presence of threatened and endangered bats before improvements were made to allow for visitor access. Use of the mine by endangered bats would preclude visitor use to protect the bats. If bats use the mine only seasonally, the mine could be open during other seasons. No threatened or endangered bat species are known to use the mine at this time, and therefore no impacts are anticipated.

There is a potential for vandalism and disturbance to the peregrine falcon hacking site. Birds and official observers from the reintroduction program might be present at the site between May and September. The trail and overlooks would be located to avoid disturbance to the hacking site. Visitor education and interpretation of the peregrine reintroduction program would be available when birds are present. The WVDNR and USFWS would be consulted if this alternative was chosen to ensure that there would be no adverse impacts on the peregrine falcons.

No impacts on other rare species or federally listed, proposed, or candidate threatened or endangered species would be expected under this alternative.

Visual Quality/Aesthetics

There would be short-term adverse impacts on aesthetics because of construction equipment on-site and until revegetation covered construction scars at the upper parking area, on the trail, and around historic structures.

The structures from which vegetation was cleared would be visible from the opposite rim of the gorge. More of the development would be visible under this alternative. The visitor transport system would be designed to be as compatible as possible with the historical surroundings, but it would be visible from the opposite rim of the gorge.

Any new structures would be designed to be compatible with the historical style of Kaymoor. The parking area at the top would be designed to be as unobtrusive and aesthetically appealing as possible.

Construction activities would cause short-term adverse impacts on the visual quality around Fern Creek and the rim overlooks.

Cultural Resources

Under this alternative, the highest level of preservation for cultural resources would be offered. Active measures would be taken to halt deterioration of the largest number of structures, foundations, and objects. Barrier-free vertical access would provide easy site access for all visitors to all levels of the site but would introduce a nonhistoric conveyance into a historic scene.

Visitor Use/Park Operations

Visitors would be frustrated by a lack of parking available during parking area construction. The interpretive program at Kaymoor might be curtailed during construction activities.

All new structures and conveyances would be fully accessible, except for the secondary access foot trail from the top. Major structures that are restored on the interior would be made accessible within the confines of historic preservation standards.

The visitor transport system would be designed and located so that interpretation of the site would be possible from the system. The transport system would be concessioner-operated under a permit from the National Park Service. Low visitor demand might make the transport system operation uneconomic during the off-season.

Opening the mine to visitor access would require approval and safety inspections by the Mine Safety and Health Administration. Regular safety inspections of the mine would be required.

Additional rangers and better site access would allow the park to provide Kaymoor with the best protection from vandalism of any alternative.

During improvement of Lansing Road, local residents would be inconvenienced by traffic delays. Road improvements would increase the safety of the road after completion.

Climbers who use the Fern Creek trail for access to the Endless Wall would be temporarily inconvenienced during trail reconstruction. They would either move around the construction site, make a new trail, or use one of the other existing trails in the vicinity.

The trailhead facilities, Fern Creek trail, and rim overlooks would meet all NPS and federal accessibility standards.

Routine vegetation clearing around stabilized structures at Kaymoor would be required to maintain visibility from across the gorge.

More visitors would be expected under this alternative with correspondingly greater impacts, which, in turn, would have a greater impact on park operations in terms of staff needed at Kaymoor for interpretation, law enforcement and visitor protection, emergency services (fire suppression, medical), and maintenance.

IMPACTS OF ALTERNATIVE 2

Impacts on visitors and the natural environment under this alternative would result from the following actions:

- improvement of 1.25 miles of access road from Gatewood Road (Route 9) to a trailhead at Kaymoor top
- construction of restrooms and a 25-car parking area on the top
- construction of a foot trail down the gorge to the various levels of Kaymoor

improvement of 4 miles of maintenance and emergency vehicle access road to the bench level

construction of an access between Kaymoor and the New River through the Craig Branch tunnel

removal of vegetation that threatens the stability of ruins and obstructs close-up visibility

Landownership

The National Park Service would need to acquire enough land to build a 25-car parking area at the top and would also have to acquire access rights under the railroad through the Craig Branch tunnel.

Topography/Soils

There would be minor changes in the natural topography where the foot trail has to be contoured to meet NPS standards for trail slope. Soils would be affected by trail improvement or construction of new stairs to Kaymoor bottom. Trail construction would affect at least 0.26 acres of previously disturbed soils.

There would be grading and possible cut and fill to bring access roads to NPS standards and grading and leveling at Kaymoor top to construct a parking area. Improvements to the main access road to Kaymoor top would affect at least 1.5 acre of roadside soils. Improvements to the bench level maintenance/emergency access would affect about 5 acres of soils. Construction of a 25-car trailhead parking area with visitor facilities would affect about 0.5 acre of soils, most of which has been previously disturbed. Approximately 1 acre of soils would be disturbed for construction of a boat take-out.

Mine dumps would either be left to natural revegetation or would be reclaimed and revegetated with native species approved by the park.

Air Quality

There would be a minor, localized, temporary decrease in air quality caused by dust and fumes during construction. When the trailhead parking area was heavily used, minor decreases in air quality would be caused by auto emissions.

Water Quality

No long-term adverse impacts on water quality are anticipated under this alternative. There would be minor, temporary increases in water turbidity caused by runoff of unrevegetated soils during construction of a boat take-out at the river. Restroom facilities would meet all sanitation standards and would be designed to safeguard water quality of the river and Craig Branch.

Floodplains/Wetlands

The boat take-out and the Craig Branch tunnel would be used for access to Kaymoor from the river; however, the take-out would not be used for boat access to the river from Kaymoor. Tunnel access would be closed during flood season (when commercial raft trips do not operate) and during flood hazards to prevent access to the river and visitor exposure to flood hazards. Signs would be posted to advise the public of flood hazard and denote the high-water limit.

Vegetation

Vegetation would be removed by grubbing and grading for construction of a parking area at Kaymoor top. Pruning for sight distance, ditch cleaning, and other routine road maintenance would have minor adverse impacts on vegetation along the access roads to the top and the bench level. Approximately 7 acres of vegetation would be disturbed for construction of a trailhead and parking area, access roads, and a foot trail. Approximately 1 acre of

riparian vegetation would be removed for construction of a boat take-out.

Minor pruning and other vegetation removal would be required for routine trail maintenance and for maintenance of a cleared area around stabilized historic structures.

Long-term impacts on vegetation would include tree removal for structure stabilization and visibility clearing. More trees would become potential hazard trees, which would be removed according to park policy. Approximately 40 acres of vegetation would be selectively cleared from around structures to be stabilized, with an additional 4 acres of vegetation around the coke ovens to be removed completely, including stumps.

Poison ivy and kudzu would be removed where necessary for visitor safety and to maintain visibility of selected historic structures. Routine maintenance would be required to keep the area cleared of these species.

Wildlife

During construction, mobile animals would abandon the construction site because of noise and disturbance. The improved trail might have increased use as a hunting access with subsequent loss of some animals that are open to legal taking.

There would be an indirect effect on some wildlife because of the removal of 50 acres of forest and 1 acre of riparian habitat and food source plants. The habitat loss would be negligible in the context of habitat available. Increased human presence in the gorge would decrease habitat suitability for species intolerant of human disturbance such as wild turkeys and carnivores. Those species would tend to avoid the area when people are present but would continue to use the area at other times.

Threatened, Endangered, and Rare Species

The construction site would be searched for the presence of sensitive animal species before construction. Salamanders would be relocated to suitable habitat nearby. Eastern wood rats would be trapped and released nearby. There would be no impact on bats using the mines. No known federally listed or candidate threatened or endangered plants or any plant species considered rare by the WVDNR would be affected by this alternative.

Visual Quality/Aesthetics

The impacts on aesthetics would be similar to alternative 1 but would not be as great or last as long because less construction would be undertaken.

Clearing of vegetation from haulage rails and around major structures would open up the vista of the river from above and would increase the visibility of the structures.

Cultural Resources

Significant cultural resources would be stabilized to arrest further deterioration. Structures not deemed significant to the story of mining at Kaymoor would be allowed to deteriorate, either reverting back into the natural scene or being removed for visitor safety after adequate structural documentation.

The details of the mining process and the everyday life of the people living at Kaymoor would eventually be lost. Better site access and on-site interpretation would allow increased protection of the site from vandalism.

Visitor Use/Park Operations

There would be temporary delays and travel restrictions along the main access

road during improvement. Interpretive programs using the foot trail for access from the top might have some restrictions during trail construction, although access would still be possible to the bench level by way of the Mary Draper Ingles Trail. Interpretation of the site would be improved by wayside exhibits at the trailhead.

The trail would not be accessible to all visitors because of extreme steepness. Restrooms at the trailhead would be built according to federal accessibility standards. To the maximum extent feasible, all modifications to historic structures would be carried out using barrier-free design principles in case the trail is someday made accessible.

Visitation to the site would increase, including visits from commercial rafting customers.

Maintenance costs would increase because of additional time required to clean restroom facilities, remove trash, keep structures clear of vegetation, and maintain stabilized structures.

Safety would be a foremost concern during design of trail improvements, stabilization of historic structures, and construction of a boat take-out and site access through the Craig Branch tunnel.

IMPACTS OF ALTERNATIVE 3

Impacts on visitors and natural resources under this alternative would result from the following actions:

stabilization of selected structures at Kaymoor

improvement of 4 miles of maintenance access road to the bench level

improvement of 1.5 miles of Lansing Road (Route 82) access to Fern Creek

construction of a trailhead at Fern Creek with parking and visitor facilities

construction of a barrier-free foot trail along Fern Creek to the rim of the gorge

construction of overlooks at the rim of the gorge, including a viewpoint at Canyon Rim visitor center.

Landownership

The National Park Service would need to acquire enough land to build a 25-car parking area and trailhead at Fern Creek.

Topography/Soils

Approximately 0.5 acre of soils would be disturbed for construction of a trailhead facility with parking for 25 cars.

Improvement of the Lansing Road (Route 82) access would require grading and possibly some cut and fill to widen it to NPS standards. The addition of 1.5 miles of a second lane would affect approximately 2.7 acres of soils.

The existing climbers' trail along Fern Creek would require major improvement to make it barrier-free in accordance with NPS trail standards and federal accessibility standards. Such improvement would affect topography and soils in the immediate area of the trail to a substantial degree. Such a trail is estimated to be 5 feet wide and 0.75 mile long for a total disturbed area of at least 19,800 square feet (0.45 acre). About 10,600 square feet of that is already disturbed by the current trail.

Construction of overlooks from the rim would require grading and leveling of soils and/or drilling into rock for supports.

Air Quality

There would be minor, localized, short-term adverse impacts on air quality caused by dust and fumes from equipment during trailhead, parking area, visitor facility, and rim overlook construction, and

during improvement of the Lansing Road access. There would be similar impacts during construction of the maintenance access road at Kaymoor bench level.

There would be temporary but recurring minor decreases in air quality from auto emissions at the Fern Creek trailhead parking area similar to those under alternative 1.

Water Quality

Under this alternative there would be little adverse impact on the New River as a result of runoff and erosion from unrevegetated soils. There would be minor, short-term adverse impacts from trail construction on Fern Creek from runoff where two stream crossings are constructed and where the trail runs adjacent to the creek. Sediment traps and soil erosion control blankets would be used to mitigate adverse water quality impacts due to erosion and runoff of turbid, silt-laden water from unrevegetated soils into the stream.

Floodplains/Wetlands

The New River floodplain would not be affected by this alternative. Although not officially designated a wetland, portions of the area immediately adjacent to Fern Creek probably meet the definition of wetland (see the discussion on wetlands in the "Impacts Common to All Action Alternatives" section) during wet periods. No adverse impacts would be permitted, and a net loss of wetlands would be avoided. Stream crossings would be designed to avoid impacts on either the creek or adjacent wet areas. Crossings would be wide enough to completely span the creek without the abutments creating a constriction of the flow channel.

Vegetation

Under this alternative, approximately 40 acres of forest vegetation would be cleared to make selected structures visible from across the gorge. Some overstory vegetation, including large, mature trees, would be removed from the Kaymoor site.

About 0.5 acre of vegetation would be cleared to construct a trailhead with restrooms and a parking area. Some mature trees would be removed. About 0.25 acre of vegetation would be cleared for trail improvements.

Trees identified as hazard trees would be removed from around the trailhead and along the trail.

Wildlife

There would be short-term disturbances to wildlife from construction activities. Minor, recurring disturbance would be caused by visitors using the trail, but no major adverse impacts would be expected. There would be a minor impact on the overall carrying capacity of habitat with the loss of 40 acres of forest vegetation at Kaymoor, but it would be negligible in terms of the larger amount of habitat available in the vicinity of both the Kaymoor site and the Fern Creek trail.

Threatened, Endangered, and Rare Species

There is a potential for vandalism and disturbance to the peregrine falcon hacking site. Birds and official observers from the reintroduction program might be present at the site between May and September. The trail and overlooks would be located to avoid disturbance to the hacking site. Visitor education and interpretation of the peregrine reintroduction program would be available when birds are present. The WVDNR and USFWS would be consulted if this alternative was chosen to ensure that there were no adverse impacts on the peregrine falcons.

No impacts on other rare species or federally listed, proposed, or candidate

threatened or endangered species would be expected under this alternative.

Visual Quality/Aesthetics

Construction activities would cause short-term adverse impacts on the visual quality around Fern Creek and the rim overlooks.

Clearing vegetation around the selected structures at Kaymoor would be considered an adverse impact by those who prefer the natural appearance of the New River Gorge. Others would appreciate the opportunity to see the historic structures from across the gorge.

Cultural Resources

This alternative would require less stabilization than alternative 2 because such stabilization would depend on what resources were visible from the opposite canyon rim rather than from the site itself. Structures and objects not visible from the opposite rim would be allowed to deteriorate. They would either revert back to the natural scene or be removed for visitor safety after adequate documentation. This alternative would result in eventual loss of details of the mining process and the everyday life of the people living at Kaymoor. Protection of the site from vandals would continue to be a problem because of the lack of easy access and on-site park staffing.

Visitor Use/Park Operations

Short-term construction impacts would be similar to those under the previous alternatives.

During improvement of Lansing Road, local residents would be inconvenienced by traffic delays. Road improvements would increase the safety of the road after completion.

Climbers who use the Fern Creek trail for access to the Endless Wall would be temporarily inconvenienced during trail reconstruction. They would either move around the construction site, make a new trail, or use one of the other existing trails in the vicinity.

The trailhead facilities, Fern Creek trail, and rim overlooks would meet all NPS and federal accessibility standards.

Routine vegetation clearing around stabilized structures at Kaymoor would be required to maintain visibility from across the gorge.

IMPACTS OF ALTERNATIVE 4 (CONTINUATION OF EXISTING CONDITIONS)

Impacts under this alternative would result from stabilization of structures, construction of fencing and barriers around hazardous structures, and minor improvements to the Mary Draper Ingles Trail in the vicinity of Kaymoor.

Natural Resources

There would be no impacts on floodplains and wetlands or on threatened, endangered, and rare species under this alternative.

Impacts on air and water quality would be negligible under this alternative.

Improvements to 7,000 linear feet of the Mary Draper Ingles Trail would affect about 0.16 acre of soil adjacent to the existing trail.

About 0.16 acre of forest vegetation adjacent to the Mary Draper Ingles Trail and structures to be fenced would be disturbed by trail improvement and fencing activities, but the amount of habitat lost would be negligible compared to the other action alternatives.

There would be temporary minor impacts on wildlife from disturbance during fence

construction. No long-term adverse impacts on wildlife would be expected.

Visual Quality/Aesthetics

The site would gradually be covered with vegetation and would eventually be totally reclaimed by natural forces. Any visual integrity of the historic area would be lost. The natural beauty of the forest would be the dominant feature of the site.

Cultural Resources

This alternative would require the National Park Service to assess which artifacts associated with the Kaymoor site could and should be entered into the park's research and museum collections. The site would be fully documented, then allowed to revert back to the natural setting. All structures and objects not removed from the site would eventually be lost as would the site's interpretive value.

Visitor Use/Park Operations

Under this alternative, the Kaymoor site would be accessible only to those who could negotiate the unimproved foot trail from the top or the Mary Draper Ingles Trail. Visitor safety would be improved by removal of some hazardous structures, fencing other hazardous structures, and posting warning signs. Natural hazards (poison ivy, poisonous snakes) would be a problem, although warning signs would include some mention of them.

Interpretive opportunities would gradually decrease as the site was naturally reclaimed. Eventually, only the location itself and the mine entrances would be able to be interpreted as the buildings decayed.

Vandalism of the site would continue.

This alternative would require the least routine maintenance of any action alternative. Some vegetation would be periodically removed to maintain access on these trails. Hazard trees along the trails would be removed. Hazard fencing would require periodic maintenance.

CULTURAL RESOURCE COMPLIANCE

New River Gorge National River currently operates under a *General Management Plan* (GMP) approved in 1982. That plan was approved for the purposes of the programmatic memorandum of agreement among the Advisory Council on Historic Preservation (ACHP), the National Conference of State Historic Preservation Officers, and the National Park Service in 1981. This document was written with the understanding that the overall concept for Kaymoor discussed in the GMP was covered in consultations on the GMP, and would not require further consultation with the ACHP or the West Virginia State Historic Preservation Officer (SHPO) unless the proposal differentiated substantially from the GMP.

Subsequently, a new programmatic agreement among the three agencies has gone into effect negating the earlier agreement. No existing plans were "grandfathered." Therefore, any alternative chosen must undergo consultation with the SHPO and the ACHP under the Advisory Council's "Regulations for the Protection of Historic and Cultural Properties" (36 CFR 800). Upon completion of consultation, the plan may be implemented. However, each action proposed must be preceded by an "Assessment of Effect on Cultural Resources" (XXX) form documenting how the actions proposed impact the cultural resources and how those impacts are to be mitigated.

All activities requiring ground disturbance will first be reviewed by an NPS archeologist to determine to extent of archeological mitigation necessary.

APPENDIX: HISTORIC AMERICAN ENGINEERING RECORD DRAWINGS

KAY MOOR COAL MINE - 1900

FAYETTEVILLE VICINITY WEST VIRGINIA

LOCATED ON THE PRECIPITOUS SLOPE OF THE NEW RIVER GORGE, IN THE HEART OF WEST VIRGINIA'S FAMOUS "SMOKELESS COAL FIELD", KAY MOOR COAL MINE OPERATED FROM 1900 TO 1962, PRODUCING APPROXIMATELY 17,000,000 TONS OF COAL. NAMED FOR JAMES KAY, WHO OVERSAW CONSTRUCTION, KAY MOOR WAS ORIGINALLY A CAPTIVE MINE OPENED BY THE LOW MOOR IRON COMPANY TO PROVIDE COKE FOR ITS HOT BLAST IRON FURNACES 100 MILES EAST IN THE COVINGTON, VIRGINIA IRON REGION.

THE SEWELL SEAM OF THE NEW RIVER GORGE, INTO WHICH KAY MOOR'S 10 FOOT DRIFT OPENING WAS DRIVEN, CONTAINED LOW VOLATILE BITUMINOUS COAL (HENCE THE NAME "SMOKELESS") WHICH PRODUCED THE BEST BLAST FURNACE COKE IN THE COUNTRY. BUT THE ELEVATION OF THE SEAM, 560 FEET ABOVE THE FLOOR OF THE GORGE AND THE TRACKS OF THE CHESAPEAKE AND OHIO RAILWAY, POSED SPECIAL ENGINEERING CHALLENGES. TO MOVE MEN AND EQUIPMENT FROM COMPANY TOWNS AT BOTH THE TOP AND BOTTOM OF THE GORGE TO THE DRIFT OPENING, A "MOUNTAIN HAULAGE", A SINGLE TRACK INCLINE WITH A STEAM POWERED CABLE HOISTING DRUM, WAS BUILT. TO QUICKLY AND SAFELY LOWER COAL TO THE PROCESSING PLANT AND BEEHIVE COKE OVENS AT THE FLOOR OF THE GORGE, A TWO TRACK GRAVITY INCLINE WAS INSTALLED. WITH FEW MODIFICATIONS, BOTH SYSTEMS REMAINED IN SERVICE THROUGHOUT KAY MOOR'S 62 YEARS OF OPERATION.

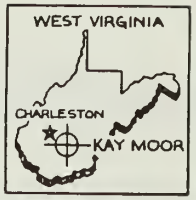
AS THE ERA OF THE BEEHIVE COKE OVEN AND THE MERCHANT PIG IRON INDUSTRY WANED, SO DID THE FORTUNES OF LOW MOOR. WHEN ITS TIPPLE BURNED IN 1924, KAY MOOR WAS SOLD TO THE NEW RIVER AND POCAHONTAS CONSOLIDATED COAL COMPANY, A SUBSIDIARY OF BERWIND-WHITE CORP OF PHILADELPHIA. BERWIND INSTALLED A NEW PROCESSING PLANT IN 1925 AND A SIMON-CARVES BAUM JIG WASHER AROUND 1928, BOTH BUILT BY LINK BELT CO. OF CHICAGO.

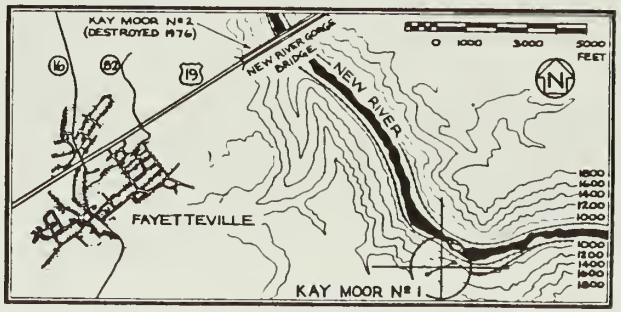
KAY MOOR IS A SIGNIFICANT INDUSTRIAL ARCHEOLOGICAL SITE FOR SEVERAL REASONS. ITS HEADHOUSE AND INCLINE SYSTEMS ILLUSTRATE THE SPECIAL TECHNIQUES EMPLOYED BY EARLY 20TH CENTURY AMERICAN MINERS TO WREST COAL FROM OUTCROPS ON STEEP SLOPES. ITS BAUM JIG WASHER, PATENTED BY SIMON-CARVES OF ENGLAND, IS EVIDENCE OF THE MAJOR TRANSITION TO THE PRODUCTION OF WASHED COAL THAT BEGAN IN THE UNITED STATES IN THE LATE 1920s. ITS FAN HOUSES, POWER HOUSE, DRIFT OPENINGS, AND OTHER INTEGRAL ELEMENTS SURVIVE, PROVIDING EXAMPLES OF TYPICAL MINING PRACTICE OF THE ERA.

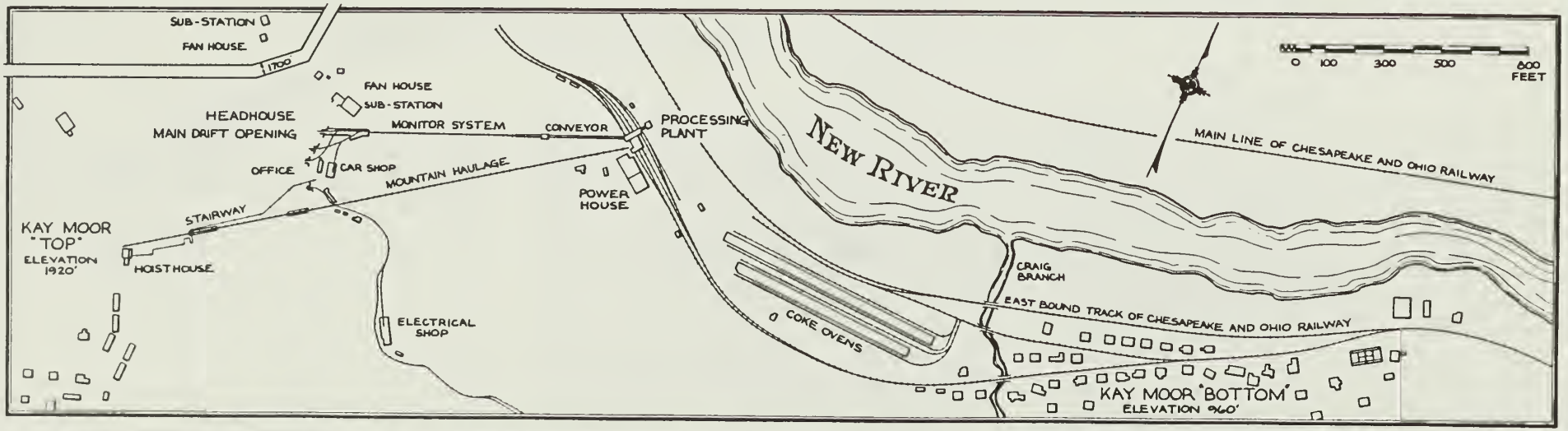
THE KAY MOOR COAL MINE RECORDING PROJECT WAS UNDERTAKEN BY THE HISTORIC AMERICAN ENGINEERING RECORD (HAER), AN AGENCY OF THE NATIONAL PARK SERVICE, U.S. DEPARTMENT OF THE INTERIOR, DURING THE SUMMER OF 1986. THE PROJECT WAS CO-SPONSORED BY THE NEW RIVER GORGE NATIONAL RIVER, OAK HILL, WEST VIRGINIA, JIM CARRICO, SUPERINTENDENT, AND THE HISTORIC AMERICAN BUILDINGS SURVEY / HISTORIC AMERICAN ENGINEERING RECORD (HABS/HAER), ROBERT J. KAPSCH, CHIEF. THE FIELD TEAM, UNDER THE DIRECTION OF ERIC DE LONY, PRINCIPAL ARCHITECT, HAER, CONSISTED OF DONALD KRAFT, PROJECT CO-SUPERVISOR AND ENGINEER (COLUMBIA UNIVERSITY), JACK BERGSTRESSER, PROJECT CO-SUPERVISOR AND HISTORIAN (AUBURN UNIVERSITY), ARCHITECTURAL TECHNICIANS MABEL A. BAIGES (KANSAS STATE UNIVERSITY), BENITA C. WELCH (UNIVERSITY OF ILLINOIS), AND MICHAEL P. O'BOYLE (US/ICOMOS AND UNIVERSITY COLLEGE, DUBLIN, IRELAND), AND GRAPHIC DESIGNER RICHARD SARIAN (CLEVELAND INSTITUTE OF ART). FORMAL ON-SITE PHOTOGRAPHY WAS DONE BY JET LOWE, HAER STAFF PHOTOGRAPHER. SPECIAL CONSULTING SERVICES WERE PROVIDED BY JOHN R. BOWIE, AIA (WALLINGFORD, PA.).

LOCATION MAP TAKEN FROM USGS 7.5' SERIES FAYETTEVILLE QUADRANGLE (PHOTOREVISED 1976).
UTM LOCATIONS:
17.494190.4210690 (HEADHOUSE)
17.494460.4211020 (PROCESSING PLANT)

SITE PLAN FROM "INSURANCE MAP OF KAY MOOR Nº 1", PREPARED FOR NEW RIVER AND POCAHONTAS CONSOLIDATED COAL CO., KAY MOOR DIVISION, 1926. (FROM BERWIND-WHITE LAND COMPANY, CHARLESTON, WEST VIRGINIA)







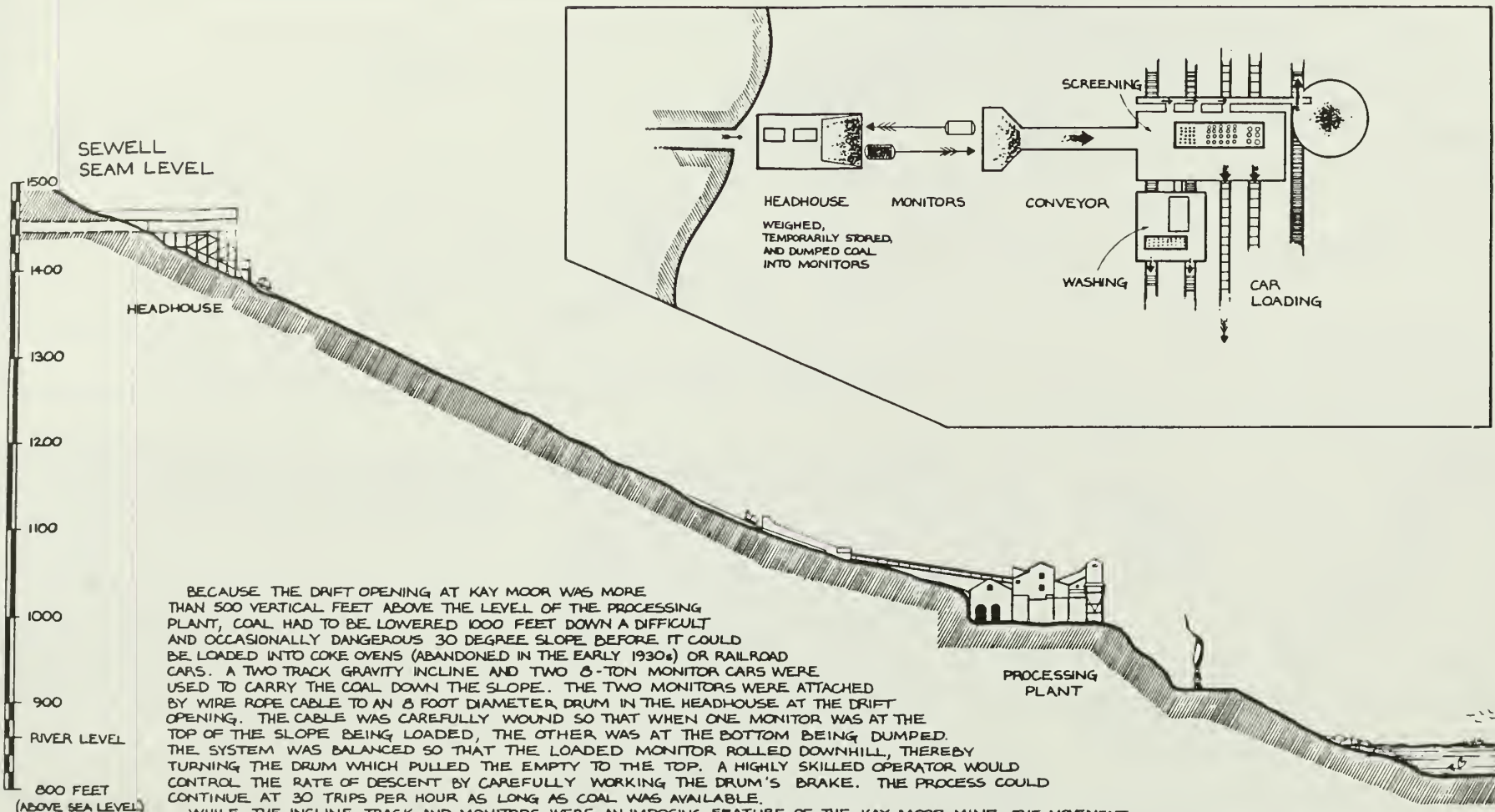
KAY MOOR COAL MINE - 1900
SOUTH SIDE OF NEW RIVER, 1/2 MILES UPSTREAM OF NEW RIVER GORGE BRIDGE (U.S. RT. 19)
FAYETTEVILLE VICINITY WEST VIRGINIA
FAYETTE COUNTY

DELINEATED BY DONALD KRAFT, 1986

KEY MOOR COAL MINE RECORDING PROJECT

HISTORIC AMERICAN ENGINEERING RECORD WV - 38

SHEET 1 - 16



BECAUSE THE DRIFT OPENING AT KAY MOOR WAS MORE THAN 500 VERTICAL FEET ABOVE THE LEVEL OF THE PROCESSING PLANT, COAL HAD TO BE LOWERED 1000 FEET DOWN A DIFFICULT AND OCCASIONALLY DANGEROUS 30 DEGREE SLOPE BEFORE IT COULD BE LOADED INTO COKE OVENS (ABANDONED IN THE EARLY 1930s) OR RAILROAD CARS. A TWO TRACK GRAVITY INCLINE AND TWO 8-TON MONITOR CARS WERE USED TO CARRY THE COAL DOWN THE SLOPE. THE TWO MONITORS WERE ATTACHED BY WIRE ROPE CABLE TO AN 8 FOOT DIAMETER DRUM IN THE HEADHOUSE AT THE DRIFT OPENING. THE CABLE WAS CAREFULLY WOUND SO THAT WHEN ONE MONITOR WAS AT THE TOP OF THE SLOPE BEING LOADED, THE OTHER WAS AT THE BOTTOM BEING DUMPED. THE SYSTEM WAS BALANCED SO THAT THE LOADED MONITOR ROLLED DOWNHILL, THEREBY TURNING THE DRUM WHICH PULLED THE EMPTY TO THE TOP. A HIGHLY SKILLED OPERATOR WOULD CONTROL THE RATE OF DESCENT BY CAREFULLY WORKING THE DRUM'S BRAKE. THE PROCESS COULD CONTINUE AT 30 TRIPS PER HOUR AS LONG AS COAL WAS AVAILABLE.

WHILE THE INCLINE TRACK AND MONITORS WERE AN IMPOSING FEATURE OF THE KAY MOOR MINE, THE MOVEMENT OF COAL WAS A HIGHLY ORGANIZED ROUTINE THAT BEGAN AT THE LEVEL OF THE DRIFT OPENING AND CONTINUED DOWN TO THE TRACK LEVEL. AS THE COAL WAS TAKEN FROM THE MINE, IT WAS BROUGHT INTO THE HEADHOUSE. THERE, IT WAS WEIGHED AND THEN DUMPED INTO THE STRUCTURE'S LARGE STORAGE BIN, WHERE IT WAS FED DIRECTLY INTO THE MONITOR CARS THROUGH TWO CHUTES. AT THE BASE OF THE MONITOR INCLINE, THE COAL WAS DISCHARGED INTO A 100 TON CAPACITY STORAGE CHUTE. A RECIPROCATING FEEDER THEN DISTRIBUTED THE COAL ONTO A HORIZONTAL CONVEYOR WHICH LED INTO THE PROCESSING PLANT.

INSIDE THE PROCESSING PLANT, COAL WAS EITHER SCREENED, OR WASHED AND THEN SCREENED. THE BASIC SCREENING PROCESS WAS DESIGNED TO SORT THE COAL BY SIZE BEFORE IT WAS LOADED INTO RAILROAD CARS. THE WASHING AND SCREENING PROCESS, WHICH WAS CONFINED TO MEDIUM OR SMALLER SIZES OF COAL, WAS DESIGNED TO REMOVE IMPURITIES BEFORE BEING SORTED BY SIZE AND LOADED INTO RAILROAD CARS.

DURING THE PERIOD THAT KAY MOOR SERVED AS A CAPTIVE MINE OF THE LOW MOOR IRON COMPANY, MUCH OF THE SMALLER COAL WAS COKED IN BEEHIVE COKE OVENS A SHORT DISTANCE FROM THE PROCESSING PLANT. LATER, AFTER KAY MOOR WAS PURCHASED BY THE BERWIND-WHITE CORPORATION, THE COKE OVENS WERE ABANDONED AND ALL COAL WAS SHIPPED BY RAIL TO A VARIETY OF CUSTOMERS.

SITE SECTION
AND PROCESS SCHEMATIC
(LOOKING NORTHWEST)

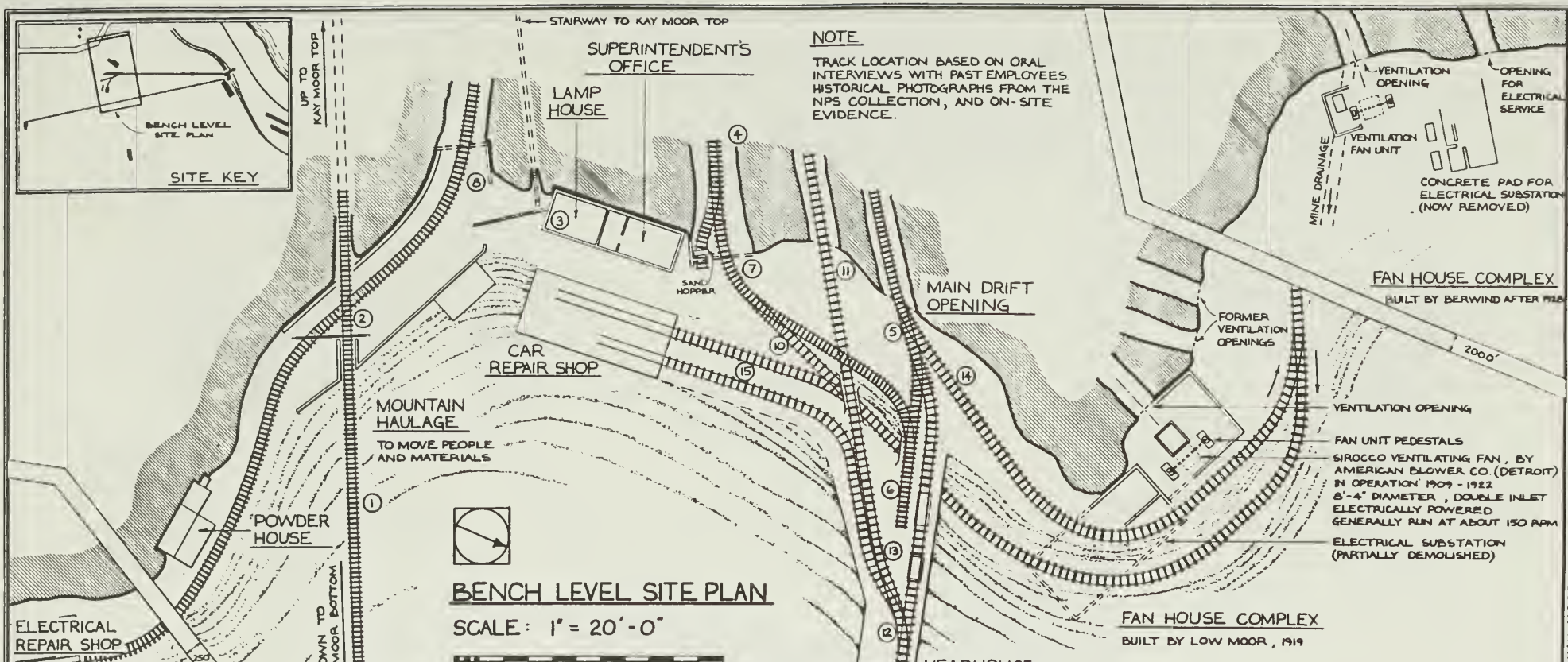
0 50 100 200 300 FEET

KAY MOOR COAL MINE - 1900
SOUTH SIDE OF NEW RIVER, 1.75 MILES UPSTREAM OF NEW RIVER GORGE BRIDGE (U.S. RT. 19)
FAYETTEVILLE VICINITY FAYETTE COUNTY WEST VIRGINIA

HISTORIC AMERICAN ENGINEERING RECORD WV - 30
SHEET 2 - 10

KAY MOOR COAL MINE RECORDING PROJECT
DELINEATED BY: MABEL A. RAYGES, 1986

IF REPRODUCED PLEASE CREDIT HISTORIC AMERICAN ENGINEERING RECORD, NATIONAL PARK SERVICE. NAME OF DELINEATOR, DATE OF THE DRAWING



NOTE

TRACK LOCATION BASED ON ORAL INTERVIEWS WITH PAST EMPLOYEES HISTORICAL PHOTOGRAPHS FROM THE NPS COLLECTION, AND ON-SITE EVIDENCE.

BENCH LEVEL SITE PLAN

SCALE: 1" = 20'-0"

THE MOVEMENT OF MEN, COAL CARS, AND MINE LOCOMOTIVES ALONG THE BENCH AT THE DRIFT OPENINGS, 560 FEET ABOVE THE FLOOR OF THE GORGE, WAS A COMPLICATED PROCESS PERFORMED IN A NARROW AREA. MINERS WERE SHUTTLED TO THE BENCH FROM COMPANY TOWNS AT THE TOP AND BOTTOM OF THE GORGE VIA THE "MOUNTAIN HAULAGE" (1), A SINGLE TRACK INCLINE POWERED BY A HOISTING ENGINE AND CABLE DRUM AT THE TOP OF THE GORGE. THE MINERS MOVED FROM THE HAULAGE DROP-OFF POINT (2), NEAR THE DRIFT OPENING, TO THE LAMPHOUSE (3), WHERE THEY PICKED UP THEIR LAMPS AND OTHER EQUIPMENT. THEY THEN ENTERED A WAITING ROOM JUST INSIDE THE DRIFT OPENING (4), AND AWAITED A MINE LOCOMOTIVE PULLING EMPTY CARS THAT WOULD TRANSPORT THEM TO THEIR WORK PLACES DEEP WITHIN THE MINE.

ONCE AT WORK IN ROOMS ON EITHER SIDE OF THE MAIN LOCOMOTIVE TRACK, MINERS BEGAN LOADING CARS EITHER WITH COAL OR SHALE. WHEN LOADED, THESE CARS WERE HAULED TO THE MAIN LOCOMOTIVE TRACK TO BE TRANSPORTED OUT OF THE MINE. DURING KAY MOOR'S EARLY YEARS, MULES PERFORMED THIS INTERMEDIATE HAULAGE, BUT THEY SOON WERE REPLACED BY GATHERING LOCOMOTIVES, SMALLER VERSIONS OF THE ELECTRIC LOCOMOTIVES THAT TRAVELLED IN AND OUT OF THE MINE.

ONCE A MAIN HAULAGE LOCOMOTIVE HAD PICKED UP A FULL STRING OF COAL CARS AND "SLATE" CARS (COAL CARS FILLED WITH SHALE), IT PROCEEDED TO THE SURFACE. AT THE DRIFT OPENING, THE LOCOMOTIVE, COAL CARS, AND SLATE CARS DIVERGED AND FOLLOWED ONE OF THREE SEPARATE TRACKS. THE LOCOMOTIVE STOPPED MOMENTARILY TO ALLOW A "SCOTCH MAN" (5) TO DISCONNECT THE STRING OF MINE CARS. IT THEN SWITCHED OFF THE MAIN TRACK, PROCEEDED ONTO A SIDING IN THE HEADHOUSE (6), REVERSED ITS MOTOR, AND RE-ENTERED THE MINE THROUGH A SEPARATE LOCOMOTIVE OPENING (7). IF THE LOCOMOTIVE NEEDED REPAIRS, IT COULD PROCEED A FEW HUNDRED FEET INTO THE MINE, SWITCH OVER TO ANOTHER TRACK, REVERSE ITS MOTOR, AND EXIT THROUGH A THIRD MINE OPENING, THE LOCOMOTIVE REPAIR EXIT (8), TO THE ELECTRICAL SHOP (9). GATHERING LOCOMOTIVES NEEDING REPAIR USED THE SAME EXIT. IF REPAIRS WERE NOT NECESSARY, THE MAIN HAULAGE LOCOMOTIVE WOULD PICK UP ANY EMPTY SLATE CARS THAT MIGHT BE WAITING ON THEIR SEPARATE TRACK (10) OUTSIDE THE MINE NEAR THE LOCOMOTIVE RETURN OPENING. IMMEDIATELY INSIDE THE MINE, THE LOCOMOTIVE PICKED UP ANY WAITING EMPTY COAL CARS THAT HAD BEEN BROUGHT BACK INTO THE MINE THROUGH A FOURTH OPENING, THE EMPTY COAL CAR ENTRANCE (11).

THE COAL AND SLATE CARS THAT HAD BEEN DETACHED FROM THE LOCOMOTIVE AT THE MAIN DRIFT OPENING WERE RELEASED INDIVIDUALLY ONTO ONE OF TWO TRACKS. THE COAL CARS WERE ALLOWED TO ROLL DOWN A SLIGHT GRADE INTO THE HEADHOUSE, WHERE THEY WERE STOPPED, WEIGHED, AND DUMPED. THEY WERE THEN SWITCHED BACK ONTO ANOTHER TRACK IN THE HEADHOUSE (12), WHERE THEY WERE ENGAGED ONTO WHAT THE MINERS REFERRED TO AS A CREEPER (13). THIS CHAIN MECHANISM SNAGGED THE CARS AND PULLED THEM BACK INTO THE MINE THROUGH THE EMPTY COAL CAR ENTRANCE.

THE SLATE CARS WERE SWITCHED BY THE SCOTCH MAN ONTO A SEPARATE TRACK (14) AND ROLLED DOWNHILL AROUND THE NORTH SIDE OF THE BENCH. THEY WERE THEN CONNECTED TO A CABLE AND PULLED TO THE TOP OF THE GORGE BY AN ENGINE DRIVEN HOISTING DRUM. AFTER BEING DUMPED WELL AWAY FROM THE SLOPE, THE CARS RETURNED TO THE BENCH LEVEL, PASSED UNDER THE SCALES IN THE HEADHOUSE, AND CAME TO A STOP. THEY WERE THEN READY TO BE HAULED BACK INTO THE MINE BY THE MAIN HAULAGE LOCOMOTIVE VIA THE LOCOMOTIVE RETURN OPENING. IF REPAIRS WERE NECESSARY, BOTH THE COAL AND SLATE CARS COULD BE SWITCHED ONTO TRACKS THAT LED INTO THE CAR REPAIR SHOP (15).

DELINEATED BY: DONALD KRAFT, 1986

KAY MOOR COAL MINE RECORDING PROJECT

KAY MOOR COAL MINE - 1900

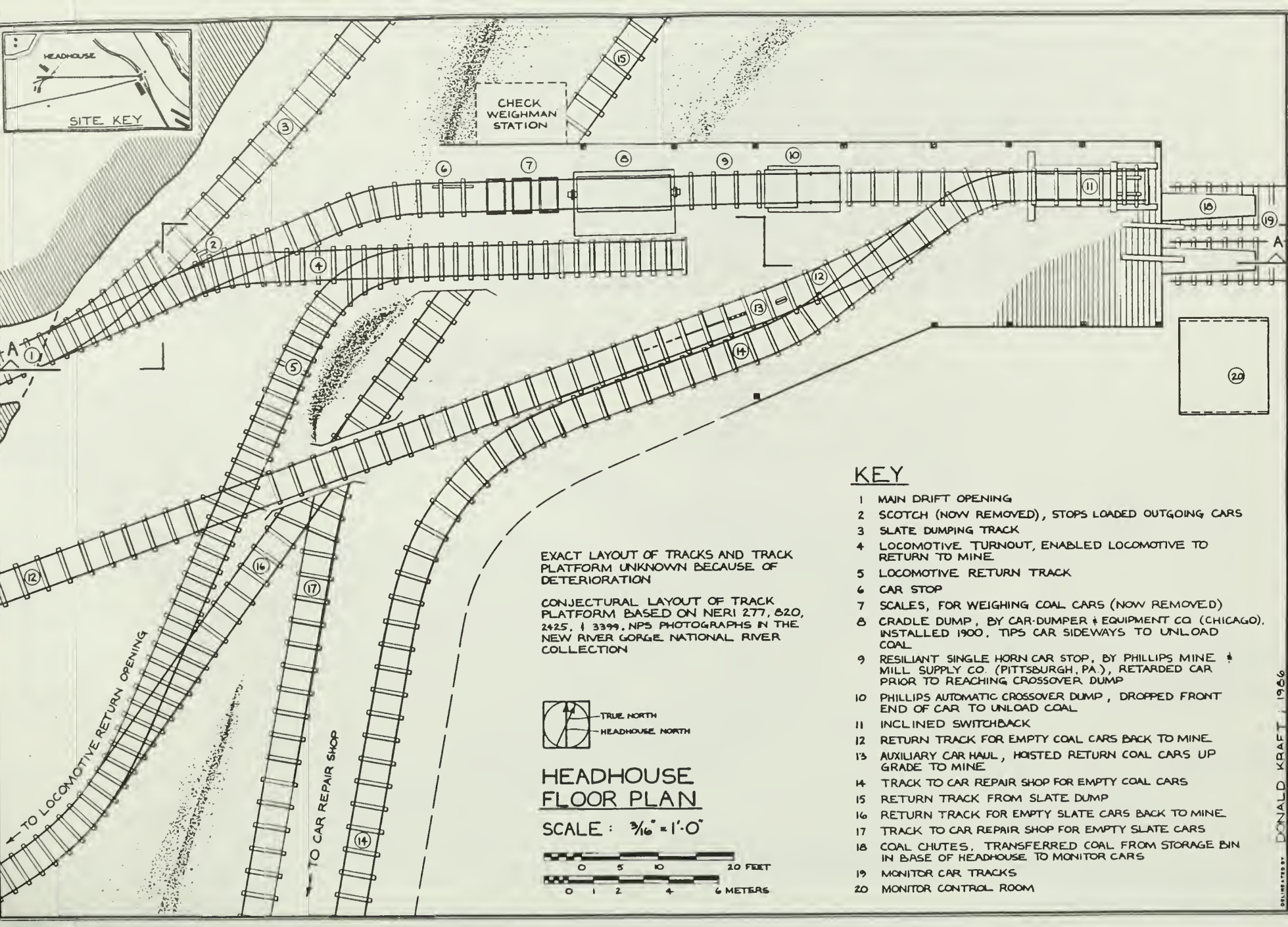
SOUTH SIDE OF NEW RIVER, 1.7 MILES UPSTREAM OF NEW RIVER GORGE BRIDGE (U.S. RT. 19)

FAYETTEVILLE VICINITY, FAYETTE COUNTY, WEST VIRGINIA

HISTORIC AMERICAN ENGINEERING RECORD WV-38

SHEET 8-16

IT REPRODUCED PLEASE CREDIT HISTORIC AMERICAN ENGINEERING RECORD, NATIONAL PARK SERVICE, DEPT. OF INTERIOR, GATE OF THE MOUNTAINS



EXACT LAYOUT OF TRACKS AND TRACK PLATFORM UNKNOWN BECAUSE OF DETERIORATION

CONJECTURAL LAYOUT OF TRACK PLATFORM BASED ON NERI 277, 820, 2425, & 3399, NPS PHOTOGRAPHS IN THE NEW RIVER GORGE NATIONAL RIVER COLLECTION

TRUE NORTH
HEADHOUSE NORTH

HEADHOUSE FLOOR PLAN

SCALE: 3/16" = 1'-0"

0 5 10 20 FEET
0 1 2 4 6 METERS

KEY

1. MAIN DRIFT OPENING
2. SCOTCH (NOW REMOVED), STOPS LOADED OUTGOING CARS
3. SLATE DUMPING TRACK
4. LOCOMOTIVE TURNOUT, ENABLED LOCOMOTIVE TO RETURN TO MINE
5. LOCOMOTIVE RETURN TRACK
6. CAR STOP
7. SCALES, FOR WEIGHING COAL CARS (NOW REMOVED)
8. CRADLE DUMP, BY CAR-DUMPER & EQUIPMENT CO. (CHICAGO), INSTALLED 1900. TIPS CAR SIDEWAYS TO UNLOAD COAL
9. RESILIANT SINGLE HORN CAR STOP, BY PHILLIPS MINE & MILL SUPPLY CO. (PITTSBURGH, PA.), RETARDED CAR PRIOR TO REACHING CROSSOVER DUMP
10. PHILLIPS AUTOMATIC CROSSOVER DUMP, DROPPED FRONT END OF CAR TO UNLOAD COAL
11. INCLINED SWITCHBACK
12. RETURN TRACK FOR EMPTY COAL CARS BACK TO MINE
13. AUXILIARY CAR HAUL, HOISTED RETURN COAL CARS UP GRADE TO MINE
14. TRACK TO CAR REPAIR SHOP FOR EMPTY COAL CARS
15. RETURN TRACK FROM SLATE DUMP
16. RETURN TRACK FOR EMPTY SLATE CARS BACK TO MINE
17. TRACK TO CAR REPAIR SHOP FOR EMPTY SLATE CARS
18. COAL CHUTES. TRANSFERRED COAL FROM STORAGE BIN IN BASE OF HEADHOUSE TO MONITOR CARS
19. MONITOR CAR TRACKS
20. MONITOR CONTROL ROOM

DELINEATED BY DONALD KRAFT / 1986

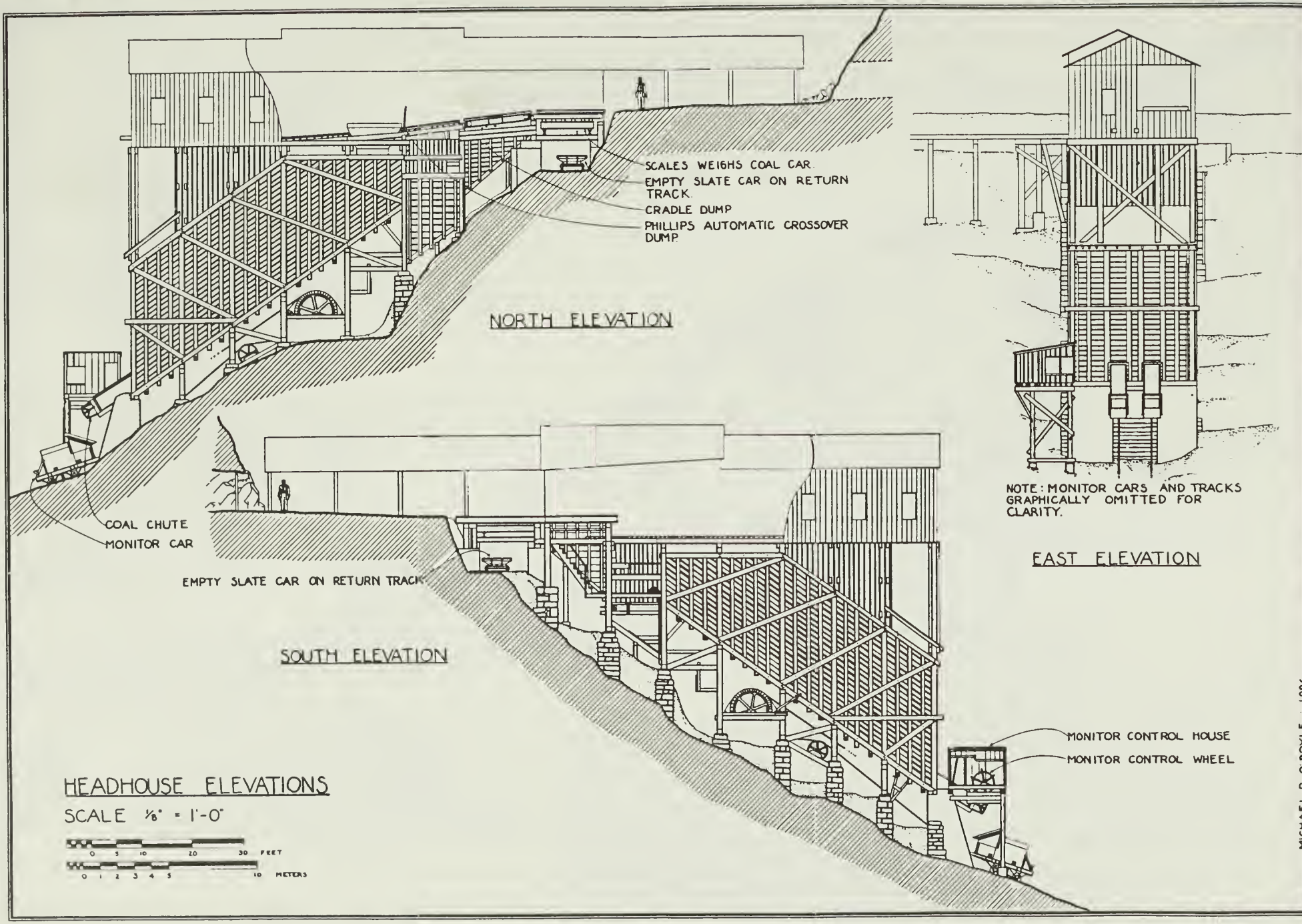
KAY MOOR COAL MINE RECORDING PROJECT

KAY MOOR COAL MINE - 1900
SOUTH SIDE OF NEW RIVER, 1.78 MILES UPSTREAM OF NEW RIVER GORGE BRIDGE U.S. RT. 19
FAYETTEVILLE VICINITY FAYETTE COUNTY WEST VIRGINIA

HISTORIC AMERICAN ENGINEERING RECORD WV-38

SHEET 4 OF 18

(C) REPRODUCED PLEASE CREDIT HISTORIC AMERICAN ENGINEERING RECORD, NATIONAL PARK SERVICE, NAME OF DELINEATOR, DATE OF THE DRAWING



HEADHOUSE ELEVATIONS

SCALE 1/8" = 1'-0"

0 5 10 20 30 FEET

0 1 2 3 4 5 10 METERS

DELINEATED BY: MICHAEL P O BOYLE, 1986

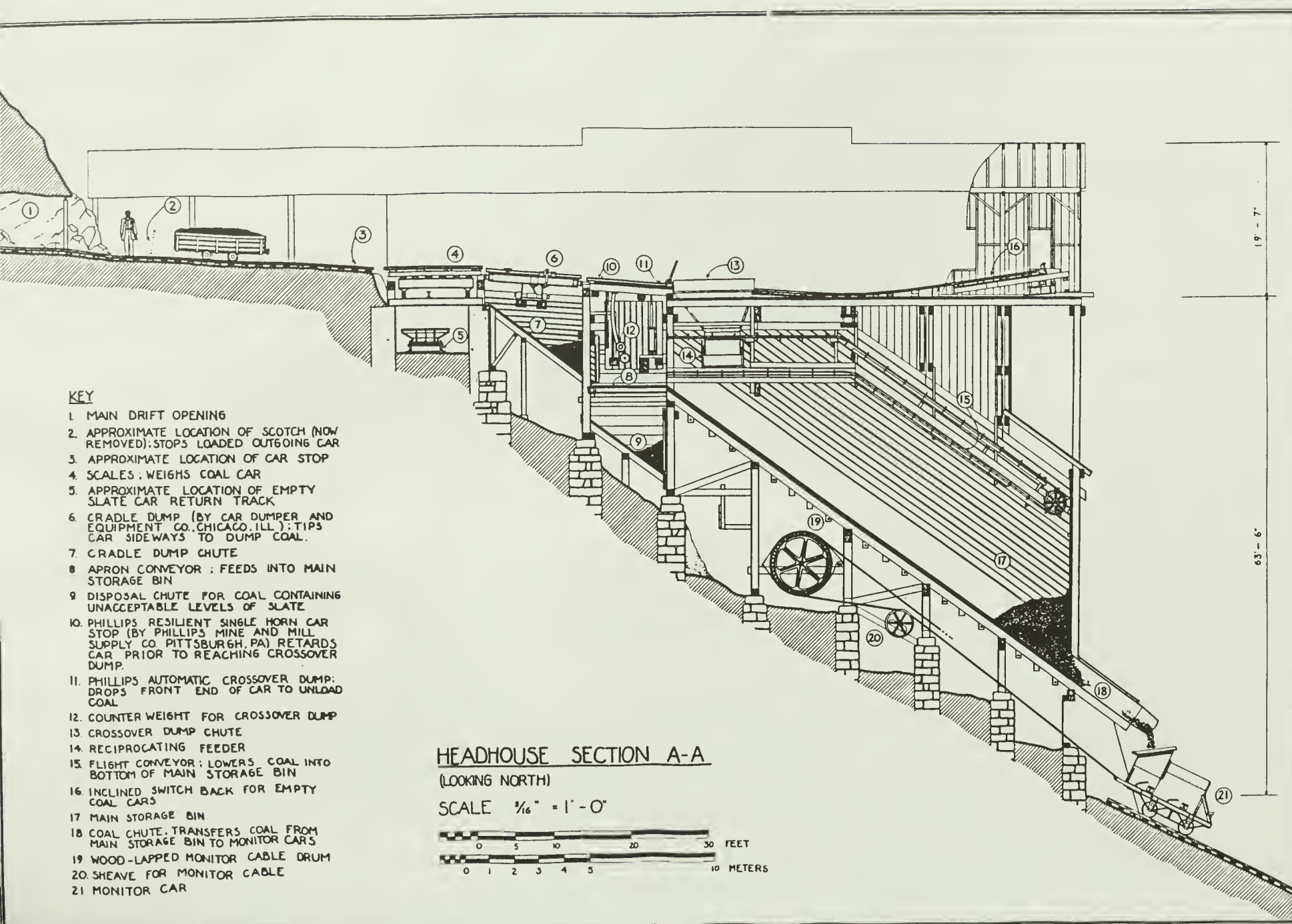
KAY MOOR COAL MINE RECORDING PROJECT

SOUTH SIDE OF NEW RIVER, 1.75 MILES UPSTREAM OF NEW RIVER GORGE BRIDGE (U.S. RT. 19)
FAYETTEVILLE VICINITY
FAYETTE COUNTY
WEST VIRGINIA

KAY MOOR COAL MINE - 1900

HISTORIC AMERICAN ENGINEERING RECORD
WV - 38

SHEET
5 - 18



KEY

1. MAIN DRIFT OPENING
2. APPROXIMATE LOCATION OF SCOTCH (NOW REMOVED): STOPS LOADED OUTGOING CAR
3. APPROXIMATE LOCATION OF CAR STOP
4. SCALES: WEIGHS COAL CAR
5. APPROXIMATE LOCATION OF EMPTY SLATE CAR RETURN TRACK
6. CRADLE DUMP (BY CAR DUMPER AND EQUIPMENT CO., CHICAGO, ILL.): TIPS CAR SIDEWAYS TO DUMP COAL.
7. CRADLE DUMP CHUTE
8. APRON CONVEYOR: FEEDS INTO MAIN STORAGE BIN
9. DISPOSAL CHUTE FOR COAL CONTAINING UNACCEPTABLE LEVELS OF SLATE
10. PHILLIPS RESILIENT SINGLE HORN CAR STOP (BY PHILLIPS MINE AND MILL SUPPLY CO. PITTSBURGH, PA) RETARDS CAR PRIOR TO REACHING CROSSOVER DUMP.
11. PHILLIPS AUTOMATIC CROSSOVER DUMP: DROPS FRONT END OF CAR TO UNLOAD COAL
12. COUNTER WEIGHT FOR CROSSOVER DUMP
13. CROSSOVER DUMP CHUTE
14. RECIPROCATING FEEDER
15. FLIGHT CONVEYOR: LOWERS COAL INTO BOTTOM OF MAIN STORAGE BIN
16. INCLINED SWITCH BACK FOR EMPTY COAL CARS
17. MAIN STORAGE BIN
18. COAL CHUTE. TRANSFERS COAL FROM MAIN STORAGE BIN TO MONITOR CARS
19. WOOD-LAPPED MONITOR CABLE DRUM
20. SHEAVE FOR MONITOR CABLE
21. MONITOR CAR

HEADHOUSE SECTION A-A

(LOOKING NORTH)

SCALE 3/16" = 1'-0"

0 5 10 20 30 FEET

0 1 2 3 4 5 10 METERS

DELINEATED BY MICHAEL P. O'BOYLE, 1986

KAY MOOR COAL MINE RECORDING PROJECT

KAY MOOR COAL MINE - 1900

SOUTH SIDE OF NEW RIVER, 1.75 MILES UPSTREAM OF NEW RIVER GORGE BRIDGE (U.S. RT 19)

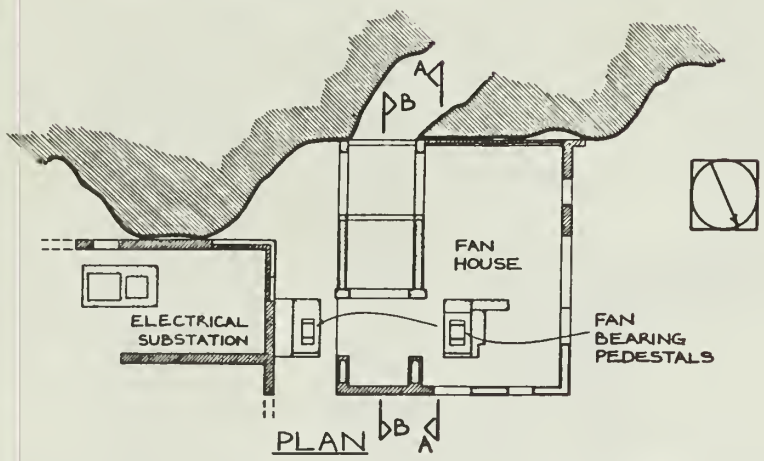
FAYETTEVILLE VICINITY FAYETTE COUNTY WEST VIRGINIA

SHEET 8 - 18

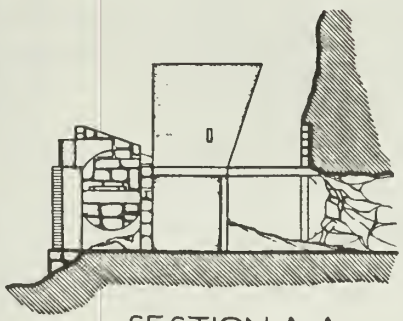
HISTORIC AMERICAN ENGINEERING RECORD WV - 38

IF REPRODUCED, PLEASE CREDIT HISTORIC AMERICAN ENGINEERING RECORD, NATIONAL PARK SERVICE. NAME OF DELINEATOR AND DATE OF THE DRAWING

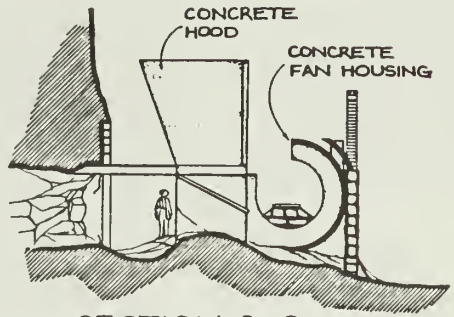
LOW MOOR - 1919



PLAN

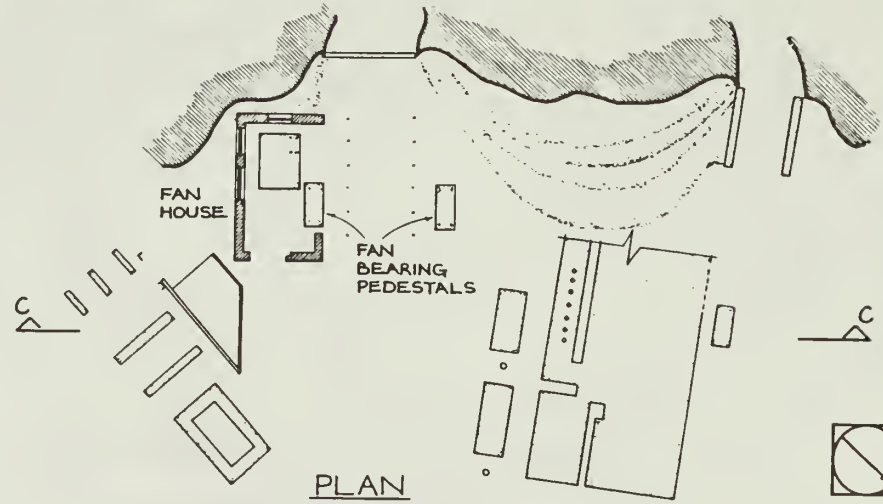


SECTION A-A



SECTION B-B

BERWIND - 1925



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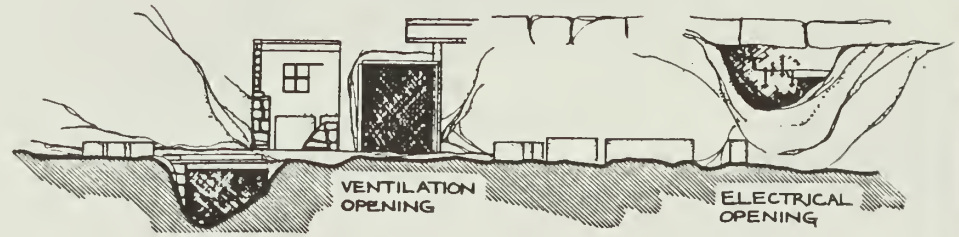
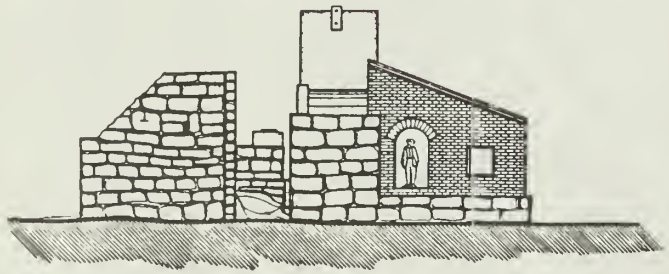


SECTION C-C



FRONT ELEVATION

VENTILATION STRUCTURES AND OPENINGS - LOW MOOR AND BERWIND ERAS

SCALE: 1/8" = 1'-0"

0 5 10 20 30 FEET

0 1 3 5 10 METERS

THE REMAINS OF THE TWO FAN HOUSES STILL STAND AT KAY MOOR. THE BRICK AND CONCRETE FAN HOUSE ADJACENT TO THE MAIN DRIFT ENTRY WAS BUILT IN 1919 AND WAS USED THROUGHOUT THE REMAINING SIX YEARS OF LOW MOOR IRON COMPANY'S OWNERSHIP. LOW MOOR BUILT THE FIREPROOF STRUCTURE AFTER 18 YEARS OF ILL-LUCK WITH WOODEN FAN HOUSES, DURING WHICH TIME THREE FIRES OCCURRED.

WHETHER THE FAN SYSTEM SHOULD FORCE AIR INTO THE MINE AND OUT THE DRIFT OPENINGS OR PULL AIR THROUGH THE DRIFT OPENINGS TO EXHAUST VIA THE FAN HOUSE WAS A QUESTION NEVER FULLY RESOLVED DURING THE LOW MOOR ERA. LIKEWISE, ANOTHER VARYING FACTOR WAS THAT OF PROPER FAN DIAMETER AND ROTATIONAL SPEED. KAY MOOR WAS ORIGINALLY VENTILATED BY A 20 FOOT DIAMETER CRAWFORD McCRIMMON FAN, WHICH WAS EXCHANGED FOR A 16 FOOT DIAMETER MODEL AROUND 1908. IN 1910, AN 8'-4" DIAMETER SIROCCO FAN WAS INSTALLED, AND IT CONTINUED IN USE AFTER CONSTRUCTION OF THE CONCRETE AND BRICK FAN HOUSE IN 1919. DOCUMENTARY EVIDENCE INDICATES THAT IT SERVED MOST OF ITS LIFETIME AS A FORCE FAN, BUT WAS POSSIBLY USED AS AN EXHAUST FAN FOR A TIME AROUND 1919-1920.

WHEN BERWIND ACQUIRED KAY MOOR IN 1925, THEY ABANDONED THE OLD SYSTEM AND INSTALLED A NEW FAN HOUSE AT A NEW VENTILATING SHAFT TWO THOUSAND FEET DOWN RIVER FROM THE MAIN DRIFT OPENINGS. ONLY FOUNDATIONS AND TRACES OF FORMER WALLS SURVIVE AS OF 1986.

DELINEATED BY: MABEL A. BAIGES; 1986

KAY MOOR COAL MINE RECORDING PROJECT

KAY MOOR COAL MINE - 1900
SOUTH SIDE OF NEW RIVER, 1.70 MILES UPSTREAM OF NEW RIVER GORGE BRIDGE (U.S. RT. 19)
FAYETTEVILLE VICINITY — FAYETTE COUNTY — WEST VIRGINIA

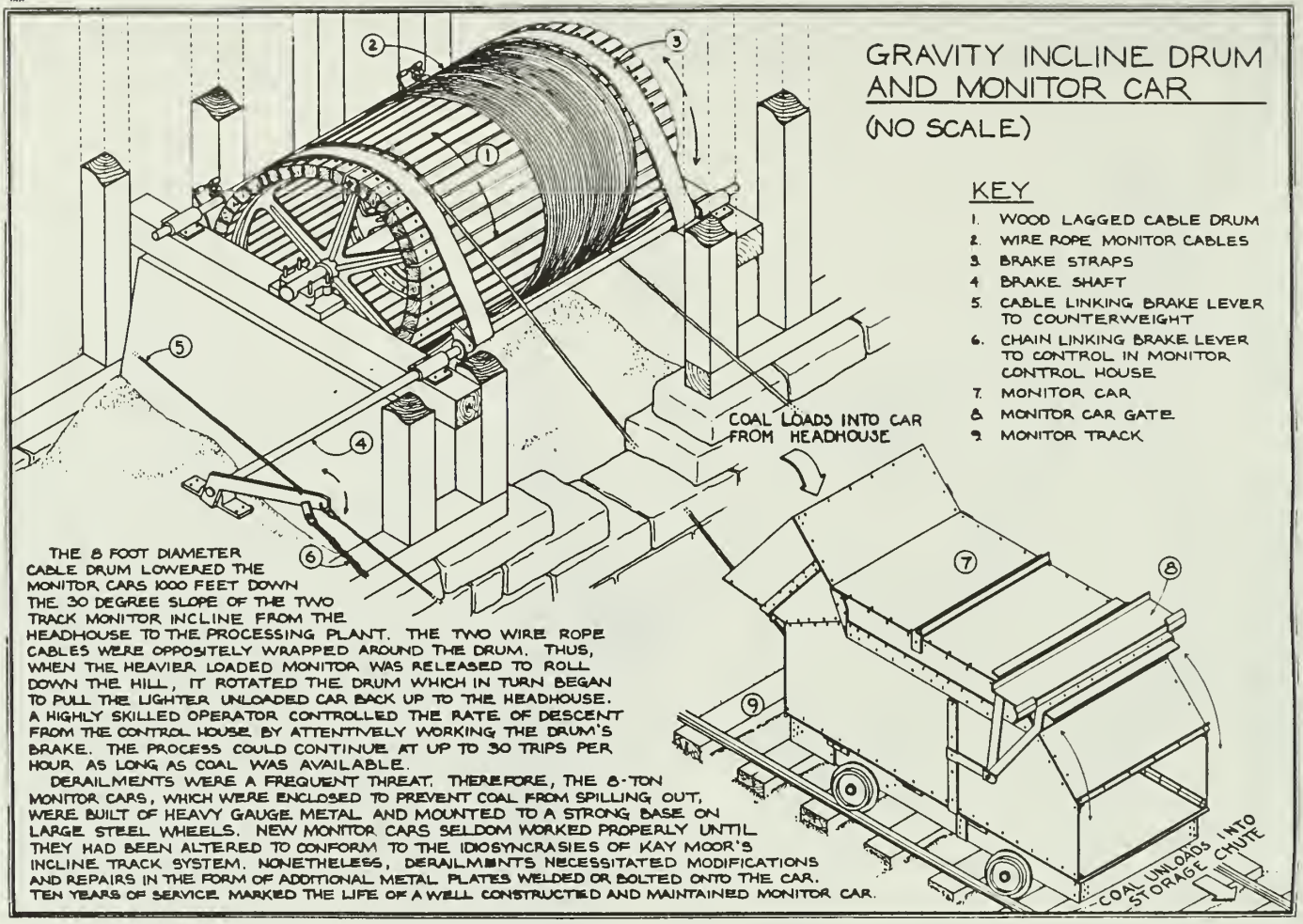
SHEET 7 - 16

HISTORIC AMERICAN ENGINEERING RECORD WV - 38

IF REPRODUCED, PLEASE CREDIT: HISTORIC AMERICAN ENGINEERING RECORD, NATIONAL PARK SERVICE. BASIS OF DELINEATION: DATE OF THIS DRAWING

GRAVITY INCLINE DRUM AND MONITOR CAR

(NO SCALE)

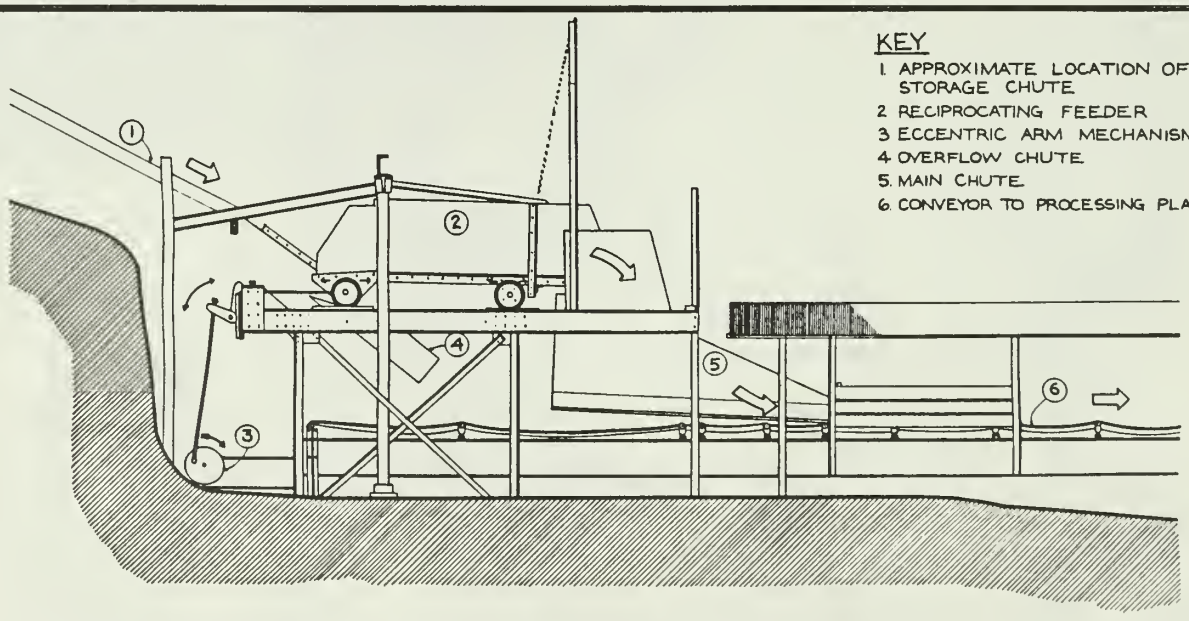


KEY

1. WOOD LAGGED CABLE DRUM
2. WIRE ROPE MONITOR CABLES
3. BRAKE STRAPS
4. BRAKE SHAFT
5. CABLE LINKING BRAKE LEVER TO COUNTERWEIGHT
6. CHAIN LINKING BRAKE LEVER TO CONTROL IN MONITOR CONTROL HOUSE
7. MONITOR CAR
8. MONITOR CAR GATE
9. MONITOR TRACK

THE 8 FOOT DIAMETER CABLE DRUM LOWERED THE MONITOR CARS 1000 FEET DOWN THE 30 DEGREE SLOPE OF THE TWO TRACK MONITOR INCLINE FROM THE HEADHOUSE TO THE PROCESSING PLANT. THE TWO WIRE ROPE CABLES WERE OPPOSITELY WRAPPED AROUND THE DRUM. THUS, WHEN THE HEAVIER LOADED MONITOR WAS RELEASED TO ROLL DOWN THE HILL, IT ROTATED THE DRUM WHICH IN TURN BEGAN TO PULL THE LIGHTER UNLOADED CAR BACK UP TO THE HEADHOUSE. A HIGHLY SKILLED OPERATOR CONTROLLED THE RATE OF DESCENT FROM THE CONTROL HOUSE BY ATTENTIVELY WORKING THE DRUM'S BRAKE. THE PROCESS COULD CONTINUE AT UP TO 30 TRIPS PER HOUR AS LONG AS COAL WAS AVAILABLE.

DERAILMENTS WERE A FREQUENT THREAT. THEREFORE, THE 8-TON MONITOR CARS, WHICH WERE ENCLOSED TO PREVENT COAL FROM SPILLING OUT, WERE BUILT OF HEAVY GAUGE METAL AND MOUNTED TO A STRONG BASE ON LARGE STEEL WHEELS. NEW MONITOR CARS SELDOM WORKED PROPERLY UNTIL THEY HAD BEEN ALTERED TO CONFORM TO THE IDIOSYNCRASIES OF KAY MOOR'S INCLINE TRACK SYSTEM. NONETHELESS, DERAILMENTS NECESSITATED MODIFICATIONS AND REPAIRS IN THE FORM OF ADDITIONAL METAL PLATES WELDED OR BOLTED ONTO THE CAR. TEN YEARS OF SERVICE MARKED THE LIFE OF A WELL CONSTRUCTED AND MAINTAINED MONITOR CAR.



KEY

1. APPROXIMATE LOCATION OF STORAGE CHUTE
2. RECIPROCATING FEEDER
3. ECCENTRIC ARM MECHANISM
4. OVERFLOW CHUTE
5. MAIN CHUTE
6. CONVEYOR TO PROCESSING PLANT

RECIPROCATING FEEDER- SOUTH ELEVATION

SCALE: ½" = 1'-0"

0 1 3 5 10 FEET

0 1 2 METERS

AT THE BOTTOM OF THE MONITOR CAR'S DESCENT, ITS GATE WAS OPENED BY A MECHANICALLY ACTIVATED LATCH AND THE LOAD DISCHARGED INTO A 100 TON STORAGE CHUTE. AT THE BASE OF THE STORAGE CHUTE, A RECIPROCATING FEEDER DISTRIBUTED THE COAL ONTO THE CONVEYOR BELT WHICH LED INTO THE PROCESSING PLANT. THIS RECIPROCATING FEEDER WAS MOUNTED ON WHEELS AND ATTACHED TO AN ARM ECCENTRICALLY MOUNTED TO THE ELECTRICAL MOTOR, WHICH PRODUCED THE DESIRED BACK AND FORTH SHAKING MOTION. THE SPEED OF THIS MOTION COULD BE REGULATED, THUS INSURING A STEADY, EVEN FLOW OF COAL ONTO THE CONVEYOR BELT.

DELINEATED BY MICHAEL P. O'BOYLE, 1986

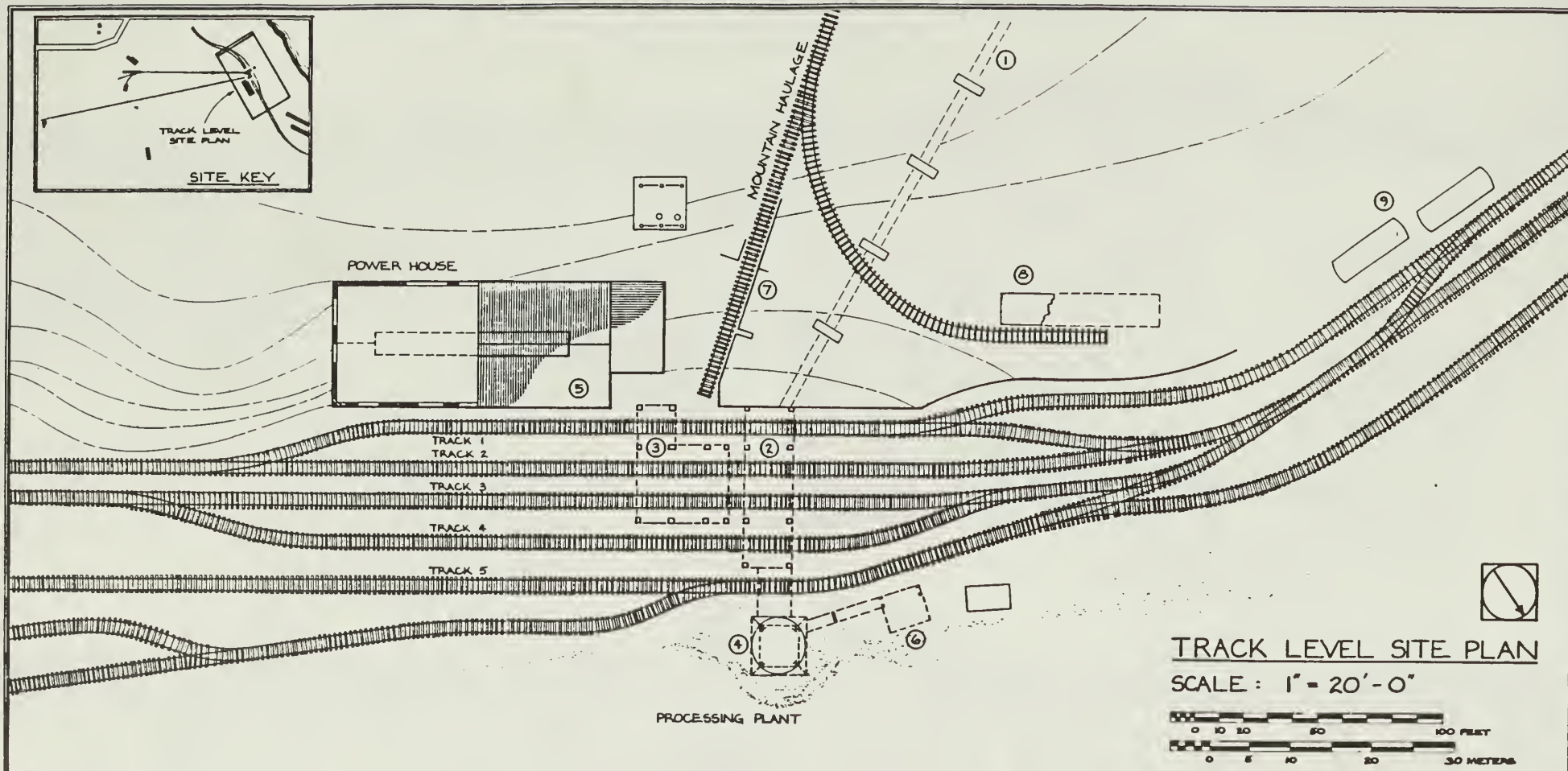
KAY MOOR COAL MINE RECORDING PROJECT

KAY MOOR COAL MINE - 1900

SOUTH SIDE OF NEW RIVER, 1.7 MILES UPSTREAM OF NEW RIVER GORGE BRIDGE (U.S. RT. 19) FAYETTEVILLE VICINITY, FAYETTE COUNTY, WEST VIRGINIA

SHEET 8 OF 18

HISTORIC AMERICAN ENGINEERING RECORD WV - 30



TRACK LEVEL SITE PLAN

SCALE: 1" = 20'-0"

0 10 20 50 100 FEET

0 5 10 20 30 METERS

AFTER BEING LOWERED DOWN KAY MOOR'S GRAVITY INCLINE, FRESHLY MINED COAL ARRIVED AT THE RAILROAD TRACK LEVEL, WHERE IT WAS DUMPED INTO A 100 TON HOPPER AND FED BY A RECIPROCATING FEEDER ONTO A HORIZONTAL BELT CONVEYOR (LINK BELT COMPANY, CHICAGO)(1). FROM THERE, IT WAS CARRIED INTO THE PROCESSING PLANT, WHERE IT WAS SORTED, WASHED IF NECESSARY, AND LOADED INTO RAILROAD CARS FOR SHIPMENT.

THE PROCESSING PLANT (ACTUALLY THREE FACILITIES, A COAL SCREENING ROOM (2), A COAL WASHING AND SCREENING ROOM (3), AND A SLACK COAL STORAGE TANK (4)) IS NOT THE OLDEST BUILDING AT THE TRACK LEVEL IT IS PREDATED BY THE POWER HOUSE (5), COKE OVENS, AND VARIOUS MINOR SUPPORT STRUCTURES. THE ORIGINAL PROCESSING PLANT, BUILT BY THE LOW MOOR IRON COMPANY IN 1900, WAS CAPABLE OF LOADING COAL ONTO THREE RAILROAD TRACKS. THE TIMBER STRUCTURE CONTAINED A COAL CRUSHER AND GRAVITY COAL SCREENS. LOADING BOOMS WERE EVENTUALLY ADDED TO REDUCE BREAKAGE WHEN COAL WAS LOADED INTO RAILROAD CARS. AFTER THE PROCESSING PLANT BURNED IN 1924, KAY MOOR WAS SOLD TO NEW RIVER AND POCAHONTAS CONSOLIDATED COAL COMPANY, A SUBSIDIARY OF BERWIND-WHITE CORPORATION OF PHILADELPHIA. THE NEW OWNERS BUILT A MODERN, FIREPROOF, CORRUGATED METAL PROCESSING PLANT SHORTLY THEREAFTER IN 1925. A SIMON-CARVES BAUM JIG COAL WASHING PLANT (LINK BELT COMPANY, CHICAGO), WHICH COULD WASH 60 TONS OF COAL PER HOUR, WAS ADDED CA. 1928.

THE NEW PROCESSING PLANT COULD LOAD COAL ONTO FIVE RAILROAD TRACKS SIMULTANEOUSLY. WHILE THE PLANT WAS EQUIPPED WITH A VARIETY OF COAL LOADING CHUTES WHICH ALLOWED NUMEROUS OPTIONS, THE ROUTINE LOADING SCHEME WAS RELATIVELY SIMPLE. COAL FROM THE WASHER ROOM, GENERALLY SIZES UNDER 3½", WAS LOADED INTO CARS ON TRACKS 1 AND 2. LARGE COAL, OVER 3½", MOVED FROM THE SHAKER SCREEN ROOM ONTO LOADING BOOMS (APRON CONVEYORS) AND INTO RAILROAD CARS ON TRACKS 3 AND 4. SLACK COAL, SMALL COAL USUALLY LESS THAN ⅛", WAS LOADED FROM THE SLACK STORAGE TANK INTO CARS ON TRACK 5. SLACK COAL WAS FREQUENTLY LOADED INTO BOX CARS VIA A MANIERRE BOX CAR LOADER(6), WHICH ALSO FED ONTO TRACK 5.

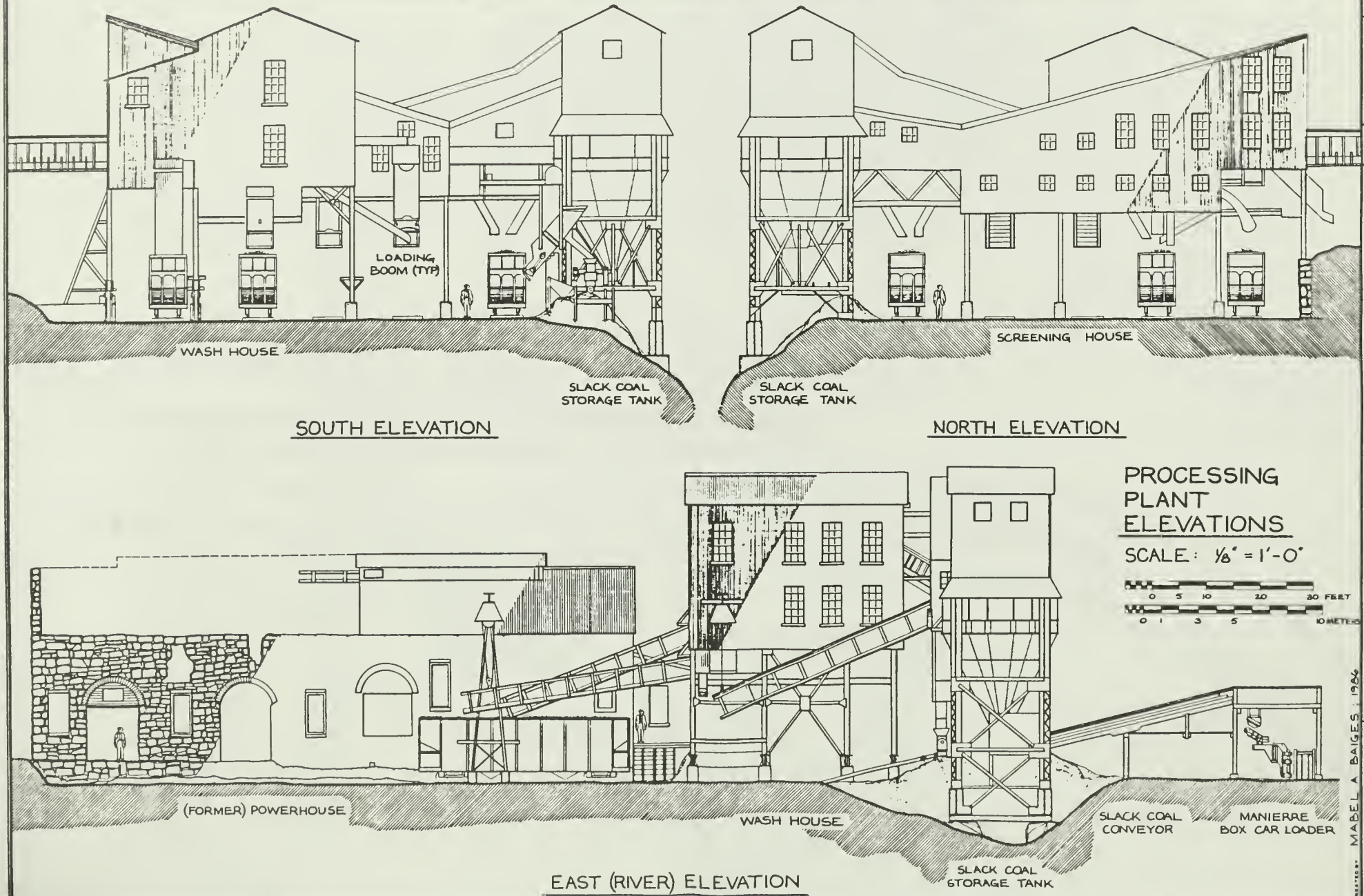
THE POWER HOUSE, WHICH WAS BUILT IN 1899-1900 AND EXPANDED IN 1903, ORIGINALLY CONTAINED THREE BOILERS, TWO STEAM ENGINES, AND AIR COMPRESSORS WHICH POWERED THE MINE'S HARRISON PICK-MACHINES. IN 1903, A GENERATING PLANT WAS INSTALLED TO PROVIDE ELECTRICITY FOR ELECTRIC MINE LOCOMOTIVES, COAL CUTTING MACHINERY, LIGHTING, AND OTHER PURPOSES. THE POWER PLANT WAS ABANDONED CA. 1934 WHEN BERWIND-WHITE SHIFTED TO ELECTRICITY PURCHASED FROM OUTSIDE SOURCES.

THE BASE OF THE MOUNTAIN HAULAGE (7), LOCATED BETWEEN THE POWER HOUSE AND THE PROCESSING PLANT, WAS THE LOADING AND UNLOADING POINT FOR PEOPLE, EQUIPMENT, AND SUPPLIES BEING TRANSPORTED TO THE MINE OPENINGS 540 FEET UP, AND TO THE TOP OF THE GORGE. SAND WAS TRANSPORTED FROM THE SAND DRYING HOUSE (8) UP TO THE MINE LEVEL, WHERE IT WAS USED TO PROVIDE TRACTION TO HAULAGE LOCOMOTIVES. TWO LARGE OIL TANKS (9) STORED OIL WHICH WAS SPRAYED ON COAL AS IT WAS LOADED INTO RAILROAD CARS TO HOLD DOWN DUST AND PREVENT THE COAL FROM FREEZING TOGETHER IN COLD WEATHER. TWO BANKS OF BEEHIVE COKE OVENS, LOCATED BETWEEN THE PROCESSING PLANT RAILROAD TRACKS AND THE EAST BOUND TRACK OF THE CHESAPEAKE AND OHIO RAILWAY, WERE ABANDONED CA. 1934.

KAY MOOR COAL MINE - 1900
SOUTH SIDE OF NEW RIVER, 170 MILES UPSTREAM OF NEW RIVER GORGE BRIDGE (US RT 19)
FAYETTEVILLE VICINITY
FAYETTE COUNTY
WEST VIRGINIA

HISTORIC AMERICAN ENGINEERING RECORD
WV - 38
SHEET 8 - 18

DELINEATED BY: MABEL A. BAIGES, 1986
KAY MOOR COAL MINE RECORDING PROJECT



SOUTH ELEVATION

NORTH ELEVATION

EAST (RIVER) ELEVATION

PROCESSING PLANT ELEVATIONS

SCALE: 1/8" = 1'-0"

0 5 10 20 30 FEET

0 1 3 5 10 METERS

DELINEATED BY: MABEL A. BAIGES, 1986

KAY MOOR COAL MINE RECORDING PROJECT

KAY MOOR COAL MINE - 1900

SOUTH SIDE OF NEW RIVER, 1.75 MILES UPSTREAM OF NEW RIVER GORGE BRIDGE (U.S. RT. 19)

FAYETTEVILLE VICINITY

FAYETTE COUNTY, WEST VIRGINIA

HISTORIC AMERICAN ENGINEERING RECORD WV-38

SHEET 10-18

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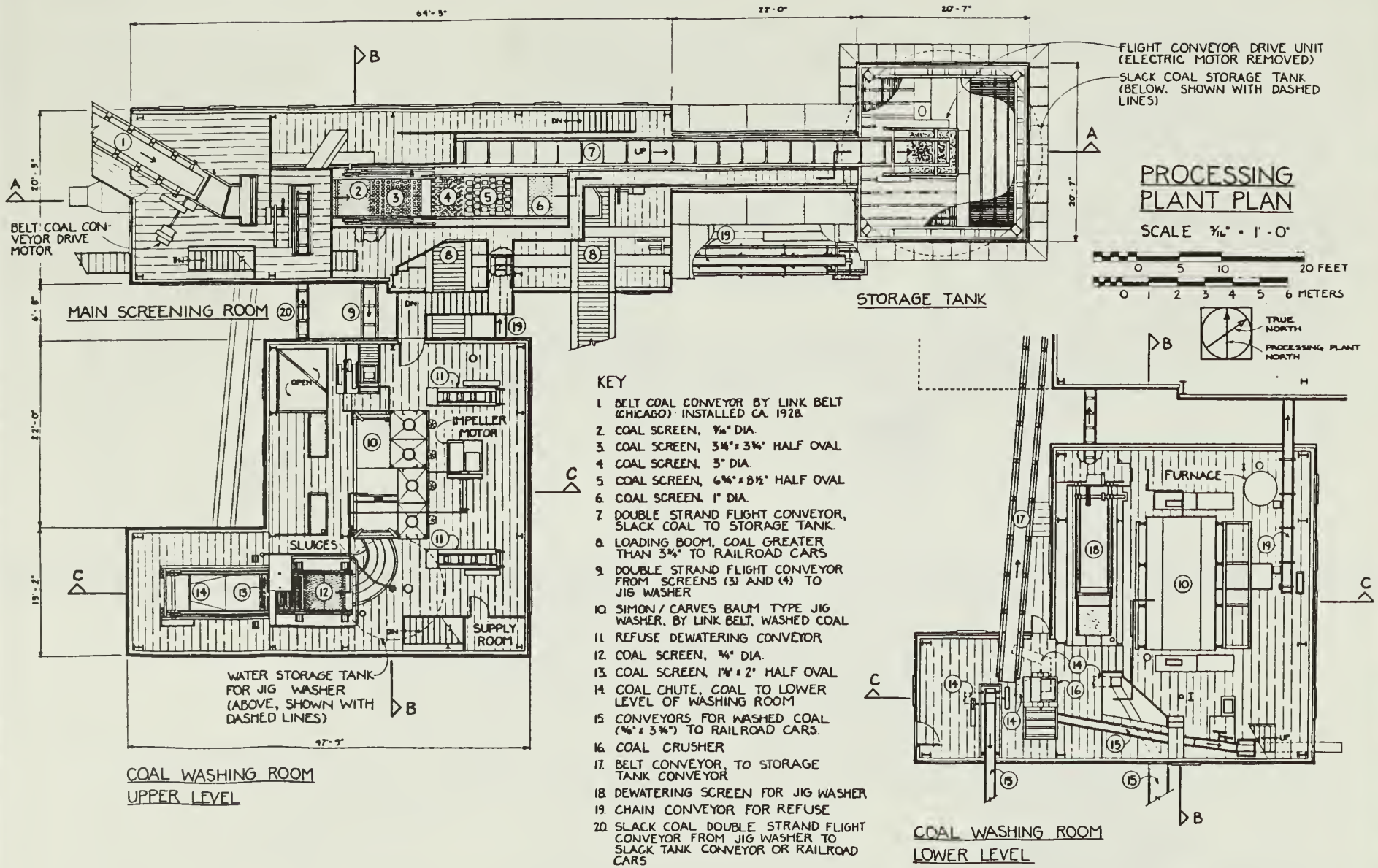


PROCESSING PLANT PLAN

SCALE 3/16" = 1'-0"

0 5 10 20 FEET

0 1 2 3 4 5 6 METERS

KEY

1. BELT COAL CONVEYOR BY LINK BELT (CHICAGO) INSTALLED CA. 1928.
2. COAL SCREEN, 5/16" DIA.
3. COAL SCREEN, 3 1/4" x 3 1/4" HALF OVAL
4. COAL SCREEN, 3" DIA.
5. COAL SCREEN, 6 3/4" x 8 1/2" HALF OVAL
6. COAL SCREEN, 1" DIA.
7. DOUBLE STRAND FLIGHT CONVEYOR, SLACK COAL TO STORAGE TANK.
8. LOADING BOOM, COAL GREATER THAN 3 1/4" TO RAILROAD CARS
9. DOUBLE STRAND FLIGHT CONVEYOR FROM SCREENS (3) AND (4) TO JIG WASHER
10. SIMON / CARVES BAUM TYPE JIG WASHER, BY LINK BELT, WASHED COAL
11. REFUSE DEWATERING CONVEYOR
12. COAL SCREEN, 3/4" DIA.
13. COAL SCREEN, 1 1/8" x 2" HALF OVAL
14. COAL CHUTE, COAL TO LOWER LEVEL OF WASHING ROOM
15. CONVEYORS FOR WASHED COAL (5/8" x 3 3/4") TO RAILROAD CARS.
16. COAL CRUSHER
17. BELT CONVEYOR, TO STORAGE TANK CONVEYOR
18. DEWATERING SCREEN FOR JIG WASHER
19. CHAIN CONVEYOR FOR REFUSE
20. SLACK COAL DOUBLE STRAND FLIGHT CONVEYOR FROM JIG WASHER TO SLACK TANK CONVEYOR OR RAILROAD CARS

COAL WASHING ROOM
UPPER LEVEL

COAL WASHING ROOM
LOWER LEVEL

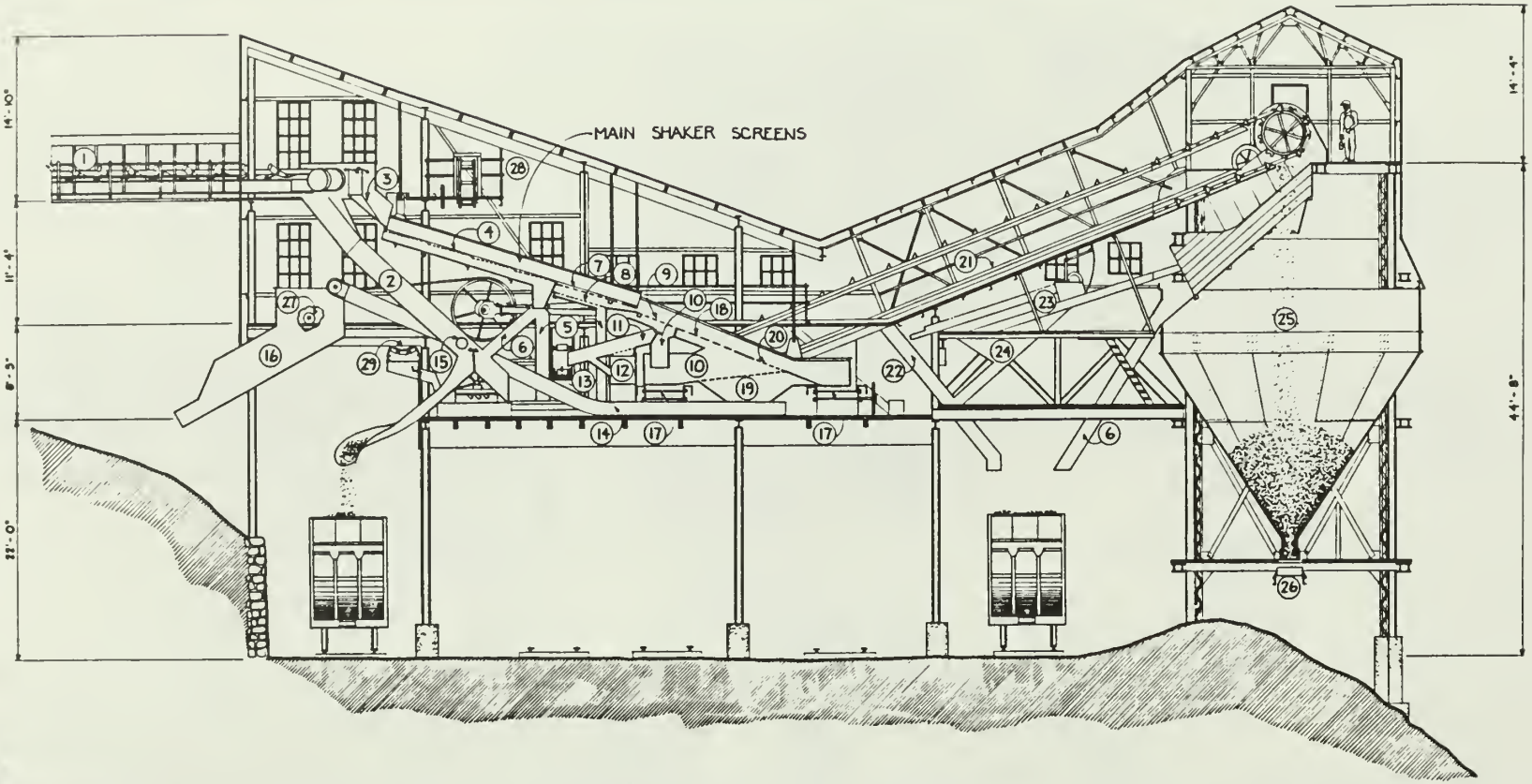
KAY MOOR COAL MINE - 1900
SOUTH SIDE OF NEW RIVER, 1.75 MILES UPSTREAM OF NEW RIVER GORGE BRIDGE (U.S. RT. 19)
FAYETTEVILLE VICINITY
FAYETTE COUNTY
WEST VIRGINIA

DELINEATED BY: BENITA C. WELCH, 1986

KAY MOOR COAL MINE RECORDING PROJECT

HISTORIC AMERICAN ENGINEERING RECORD
WV-88

SHEET 11-16



KEY

1. BELT COAL CONVEYOR, BY LINK BELT (CHICAGO), INSTALLED CA. 1928.
2. CHUTE FOR DIVERTING RUN OF MINE COAL (ROM) DIRECTLY INTO RAILROAD CARS
3. CHUTE FROM BELT CONVEYOR (1) TO COAL SCREEN
4. COAL SCREEN, 3/16" DIA.
5. CHUTE FROM 3/16" AND 5/8" SCREENS TO STORAGE TANK FLIGHT CONVEYOR (21)
6. SLACK CHUTE TO RAILROAD CARS
7. COAL SCREEN, 3 1/4" x 3 1/4" HALF OVAL
8. COAL SCREEN, 5/8" DIA.
9. COAL SCREEN, 3" DIA.
10. CHUTE TO LOADING BOOM (17)
11. CHUTE FROM SCREENS (7) AND (9) TO WASH HOUSE FLIGHT CONVEYOR (13)
12. CHUTE OFF OF 9/16" SCREEN LEADING TO CHAIN BELT (14)
13. DOUBLE STRAND FLIGHT CONVEYOR TO WASH HOUSE
14. CHAIN BELT FOR FINAL SLACK REMOVAL
15. GATE OFF OF CHAIN BELT (14) TO SLACK CHUTE (19)
16. CHUTE FOR UNDETERMINED PURPOSE
17. LOADING BOOM, TO RAILROAD CAR, FOR COAL GREATER THAN 3 3/4" DIA.
18. COAL SCREEN, 6 1/4" x 8 1/2" HALF OVAL
19. CHUTE (FOR UNDETERMINED PURPOSES) OFF OF 2 1/8" SCREEN
20. SHAKER SCREEN, 1" DIA.
21. DOUBLE STRAND FLIGHT CONVEYOR, SLACK COAL TO STORAGE TANK
22. CHUTE TO RAILROAD CAR FOR UNSCREENED SLACK OFF STORAGE TANK FLIGHT CONVEYOR (21) OR SCREENED SLACK OFF OF VIBRATING SCREEN (23)
23. WIRE MESH VIBRATING SCREEN
24. DUST HOPPER
25. SLACK COAL STORAGE TANK
26. BELT CONVEYOR FROM STORAGE TANK (25) TO BOX CAR LOADER
27. ELECTRIC MOTOR DRIVE ASSEMBLY FOR SHAKER SCREENS
28. SLACK COAL DOUBLE STRAND FLIGHT CONVEYOR FROM JIG WASHER TO STORAGE TANK CONVEYOR
29. BELT CONVEYOR FROM WASH HOUSE TO STORAGE TANK FLIGHT CONVEYOR (21)

PROCESSING PLANT
SECTION A-A
(LOOKING NORTH)

SCALE 3/16" = 1'-0"

0 5 10 20 FEET

0 1 2 3 4 5 6 METERS

DELINEATED BY: BENITA C. WELCH, 1986

KAY MOOR COAL MINE RECORDING PROJECT

SOUTH SIDE OF NEW RIVER, 1.7 MILES UPSTREAM OF NEW RIVER GORGE BRIDGE (U.S. RT. 19)
FAYETTEVILLE VICINITY — FAYETTE COUNTY — WEST VIRGINIA

KAY MOOR COAL MINE - 1900

HISTORIC AMERICAN ENGINEERING RECORD
WV - 38

SHEET 12 OF 18

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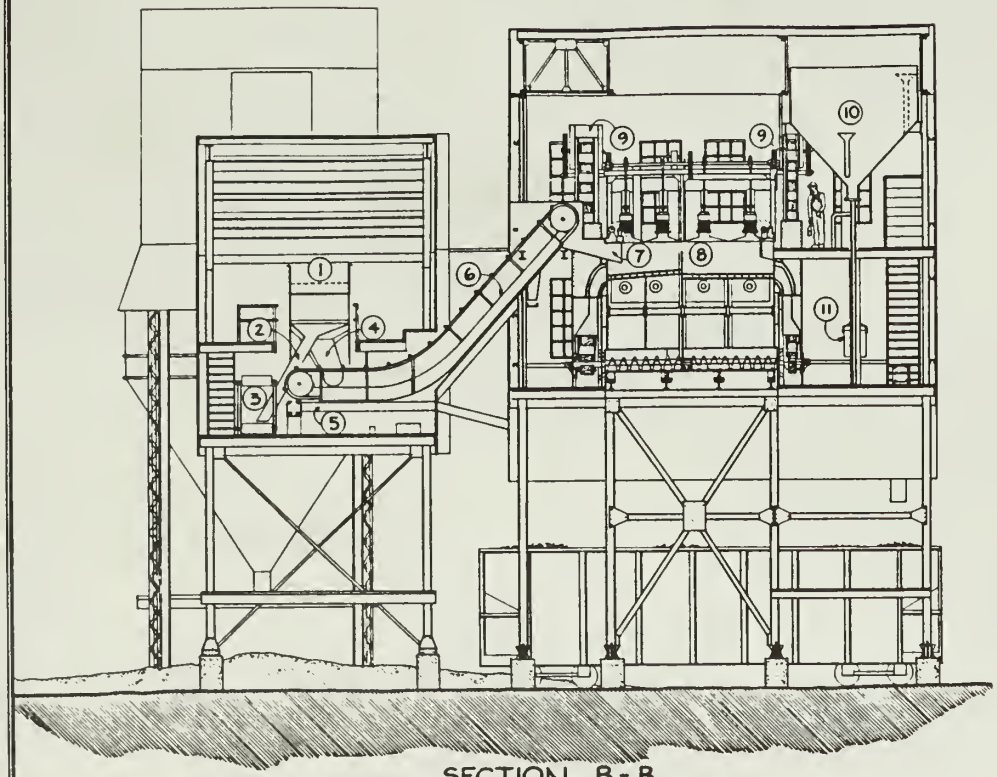
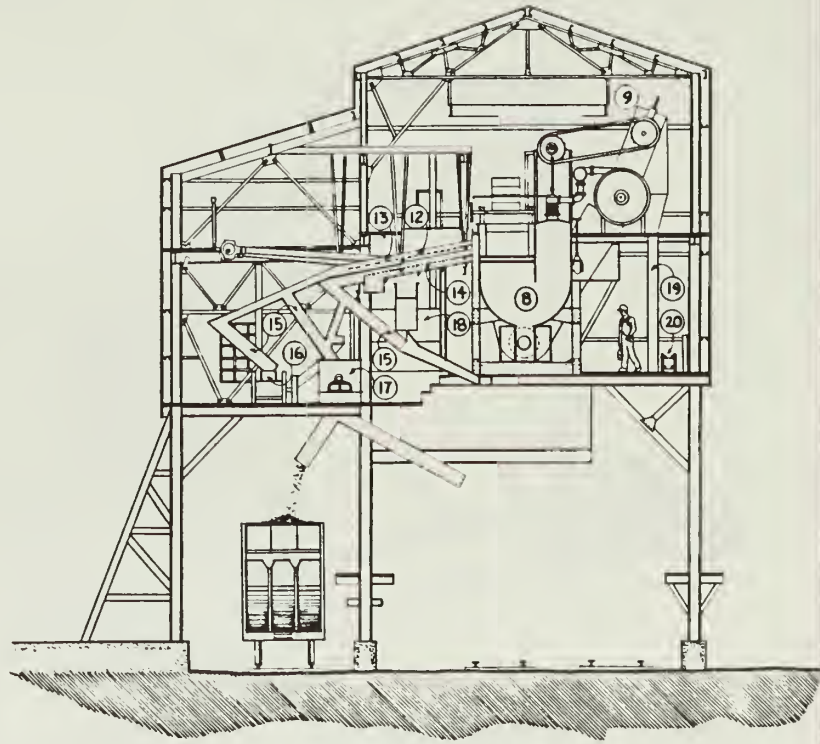


SECTION B-B

THROUGH MAIN SCREENING ROOM
AND COAL WASHING ROOM
(LOOKING EAST)



SECTION C-C

THROUGH COAL WASHING ROOM
(LOOKING NORTH)

KEY

1. MAIN SHAKER SCREEN
2. CHUTE OFF OF 3/8" SHAKER SCREEN LEADING TO SLACK TANK FLIGHT CONVEYOR (5)
3. DOUBLE STRAND FLIGHT CONVEYOR, SLACK COAL TO STORAGE TANK
4. CHUTE OFF OF 3" SHAKER SCREEN TO WASH HOUSE FLIGHT CONVEYOR (6)
5. LOADING BOOM, TO RAILROAD CAR, FOR COAL GREATER THAN 3 1/4"
6. DOUBLE STRAND FLIGHT CONVEYOR TO WASH HOUSE
7. CHUTE FROM WASH HOUSE FLIGHT CONVEYOR (6) TO JIG WASH (8)
8. SIMON-CARVES BAUM. TYPE JIG WASHER
9. REFUSE DEWATERING CONVEYOR
10. WASHERY RESERVOIR
11. HOIST
12. COAL SCREEN, 1/4" DIA.
13. COAL SCREEN, 1 1/8" x 2" HALF OVAL
14. COAL SCREEN, 9/16" DIA.
15. CHUTE FROM SHAKER SCREENS TO LOWER LEVEL
16. CHAIN CONVEYOR TO RAILROAD CARS
17. COAL CRUSHER
18. DEWATERING SCREEN
19. REFUSE CHUTE
20. CHAIN CONVEYOR TO TRANSPORT REFUSE

SCALE 3/16" = 1'-0"

0 5 10 20 30 FEET

0 1 2 3 4 5 10 METERS

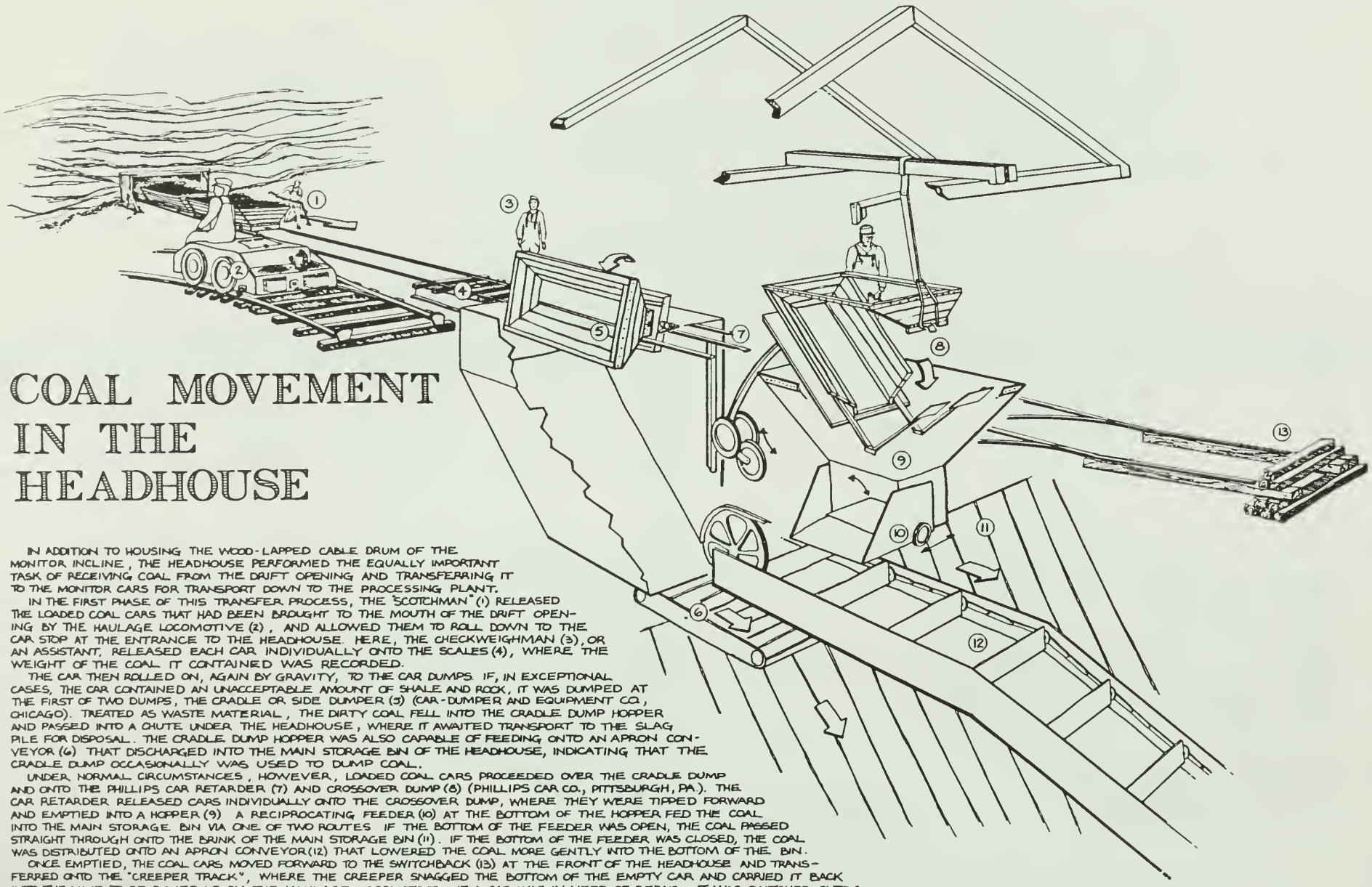
KAY MOOR COAL MINE - 1900
SOUTH SIDE OF NEW RIVER, 1.75 MILES UPSTREAM OF NEW RIVER GORGE BRIDGE (US RT 19)
FAYETTEVILLE VICINITY FAYETTE COUNTY WEST VIRGINIA

HISTORIC AMERICAN ENGINEERING RECORD WV-38

SHEET 13 OF 18

DELINEATED BY: BENITA C. WELCH, 1996

KAY MOOR COAL MINE RECORDING PROJECT



COAL MOVEMENT IN THE HEADHOUSE

IN ADDITION TO HOUSING THE WOOD-LAPPED CABLE DRUM OF THE MONITOR INCLINE, THE HEADHOUSE PERFORMED THE EQUALLY IMPORTANT TASK OF RECEIVING COAL FROM THE DRIFT OPENING AND TRANSFERRING IT TO THE MONITOR CARS FOR TRANSPORT DOWN TO THE PROCESSING PLANT.

IN THE FIRST PHASE OF THIS TRANSFER PROCESS, THE "SCOTCHMAN" (1) RELEASED THE LOADED COAL CARS THAT HAD BEEN BROUGHT TO THE MOUTH OF THE DRIFT OPENING BY THE HAULAGE LOCOMOTIVE (2), AND ALLOWED THEM TO ROLL DOWN TO THE CAR STOP AT THE ENTRANCE TO THE HEADHOUSE. HERE, THE CHECKWEIGHMAN (3), OR AN ASSISTANT, RELEASED EACH CAR INDIVIDUALLY ONTO THE SCALES (4), WHERE THE WEIGHT OF THE COAL IT CONTAINED WAS RECORDED.

THE CAR THEN ROLLED ON, AGAIN BY GRAVITY, TO THE CAR DUMPS. IF, IN EXCEPTIONAL CASES, THE CAR CONTAINED AN UNACCEPTABLE AMOUNT OF SHALE AND ROCK, IT WAS DUMPED AT THE FIRST OF TWO DUMPS, THE CRADLE OR SIDE DUMPER (5) (CAR-DUMPER AND EQUIPMENT CO., CHICAGO). TREATED AS WASTE MATERIAL, THE DIRTY COAL FELL INTO THE CRADLE DUMP HOPPER AND PASSED INTO A CHUTE UNDER THE HEADHOUSE, WHERE IT AWAITED TRANSPORT TO THE SLAG PILE FOR DISPOSAL. THE CRADLE DUMP HOPPER WAS ALSO CAPABLE OF FEEDING ONTO AN APRON CONVEYOR (6) THAT DISCHARGED INTO THE MAIN STORAGE BIN OF THE HEADHOUSE, INDICATING THAT THE CRADLE DUMP OCCASIONALLY WAS USED TO DUMP COAL.

UNDER NORMAL CIRCUMSTANCES, HOWEVER, LOADED COAL CARS PROCEEDED OVER THE CRADLE DUMP AND ONTO THE PHILLIPS CAR RETARDER (7) AND CROSSOVER DUMP (8) (PHILLIPS CAR CO., PITTSBURGH, PA.). THE CAR RETARDER RELEASED CARS INDIVIDUALLY ONTO THE CROSSOVER DUMP, WHERE THEY WERE TIPPED FORWARD AND EMPTIED INTO A HOPPER (9). A RECIPROCATING FEEDER (10) AT THE BOTTOM OF THE HOPPER FED THE COAL INTO THE MAIN STORAGE BIN VIA ONE OF TWO ROUTES. IF THE BOTTOM OF THE FEEDER WAS OPEN, THE COAL PASSED STRAIGHT THROUGH ONTO THE BRINK OF THE MAIN STORAGE BIN (11). IF THE BOTTOM OF THE FEEDER WAS CLOSED, THE COAL WAS DISTRIBUTED ONTO AN APRON CONVEYOR (12) THAT LOWERED THE COAL MORE GENTLY INTO THE BOTTOM OF THE BIN.

ONCE EMPTIED, THE COAL CARS MOVED FORWARD TO THE SWITCHBACK (13) AT THE FRONT OF THE HEADHOUSE AND TRANSFERRED ONTO THE "CREEPER TRACK", WHERE THE CREEPER SNAGGED THE BOTTOM OF THE EMPTY CAR AND CARRIED IT BACK INTO THE MINE TO BE PICKED UP BY THE HAULAGE LOCOMOTIVE. IF A CAR WAS IN NEED OF REPAIR, IT WAS SWITCHED ONTO A TRACK THAT BYPASSED THE CREEPER TRACK AND LED INTO THE CAR REPAIR SHOP.

IN THE MEANTIME, COAL IN THE MAIN STORAGE BIN WAS BEING FED THROUGH CHUTES INTO THE MONITOR CARS FOR THE TRIP DOWN SLOPE TO THE PROCESSING PLANT AT THE TRACK LEVEL.

NOTE: NO SCALE

DELINEATED BY: RICHARD SARIAN, 1986

KAY MOOR COAL MINE RECORDING PROJECT

KAY MOOR COAL MINE - 1900

SOUTH SIDE OF NEW RIVER, 176 MILES UPSTREAM FROM NEW RIVER GORGE BRIDGE (US RT 19)
FAYETTEVILLE VICINITY FAYETTE COUNTY WEST VIRGINIA

SHEET 14-16

HISTORIC AMERICAN ENGINEERING RECORD WV-98

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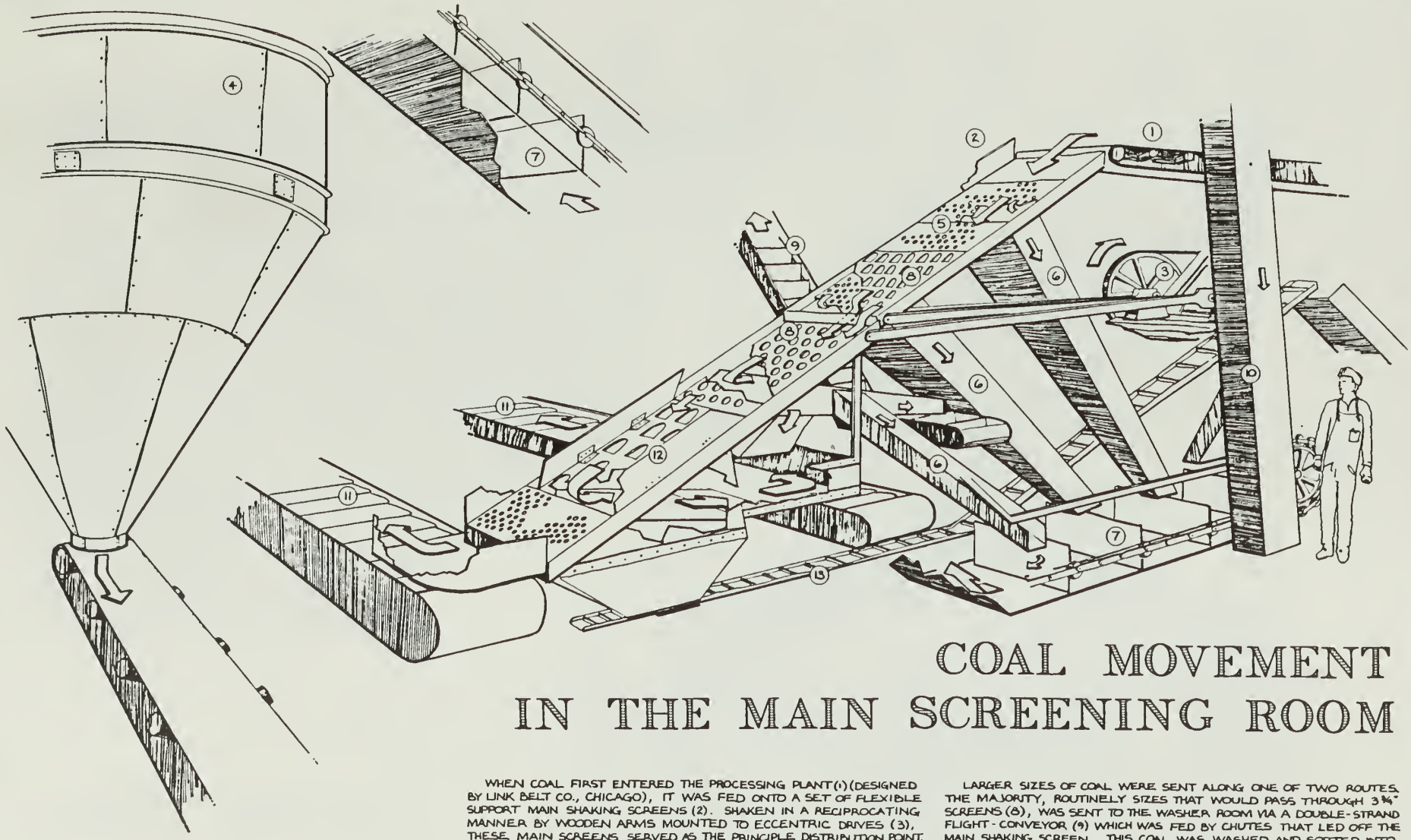

COAL MOVEMENT IN THE MAIN SCREENING ROOM

WHEN COAL FIRST ENTERED THE PROCESSING PLANT (1) (DESIGNED BY LINK BELT CO., CHICAGO), IT WAS FED ONTO A SET OF FLEXIBLE SUPPORT MAIN SHAKING SCREENS (2). SHAKEN IN A RECIPROCATING MANNER BY WOODEN ARMS MOUNTED TO ECCENTRIC DRIVES (3), THESE MAIN SCREENS SERVED AS THE PRINCIPLE DISTRIBUTION POINT, SORTING COAL INTO APPROPRIATE SIZES TO BE TRANSPORTED TO VARIOUS AREAS OF THE PROCESSING PLANT FOR STORAGE, WASHING, OR LOADING.

THE FIRST OF THESE AREAS WAS THE SLACK STORAGE TANK (4). AS COAL TRAVELED DOWN THE MAIN SHAKING SCREENS, IT PASSED OVER A SERIES OF 9/16" AND 5/8" SCREENS (5). ANY COAL THAT PASSED THROUGH THESE SMALL SCREENS (TERMED SLACK COAL) WAS FED, THROUGH A NUMBER OF CHUTES (6), ONTO A DOUBLE-STRAND FLIGHT CONVEYOR (7) THAT LED UP TO THE LARGE TANK. FROM THERE, IT COULD BE LOADED INTO RAILROAD CARS – EITHER HOPPER CARS, OR BOX CARS VIA A MANIERRE BOX CAR LOADER.

LARGER SIZES OF COAL WERE SENT ALONG ONE OF TWO ROUTES. THE MAJORITY, ROUTINELY SIZES THAT WOULD PASS THROUGH 3¾" SCREENS (8), WAS SENT TO THE WASHER ROOM VIA A DOUBLE-STRAND FLIGHT-CONVEYOR (9) WHICH WAS FED BY CHUTES THAT LED OFF THE MAIN SHAKING SCREEN. THIS COAL WAS WASHED AND SORTED INTO VARIOUS SIZES FOR SHIPMENT. THE SMALLEST WASHED COAL WAS RETURNED TO THE MAIN SCREENING ROOM, WHERE IT WAS CARRIED ABOVE THE SHAKING SCREENS AND TRANSFERRED EITHER ONTO THE SLACK CONVEYOR OR THROUGH A CHUTE (10) INTO A RAILROAD HOPPER CAR.

THE LARGEST SIZES OF COAL, THOSE THAT DID NOT FALL THROUGH THE 3¾" SCREENS, PASSED DIRECTLY ONTO ONE OF TWO APRON CONVEYOR LOADING BOOMS (11). SCREENS AT THE BOTTOM END OF THE MAIN SHAKING SCREEN COULD BE UNCOVERED (12) TO SORT LARGE COAL INTO LUMP AND OTHER SIZES. AN AUXILIARY CHUTE LOCATED UNDER THESE LARGE SCREENS COLLECTED ANY SPILLAGE AND TRANSPORTED IT, VIA A CHAIN CONVEYOR (13), TO UNLOADING CHUTES.

NOTE: NO SCALE

'KAY MOOR COAL MINE - 1900
SOUTH SIDE OF NEW RIVER, 1.75 MILES UPSTREAM OF NEW RIVER GORGE BRIDGE (U.S. RT. 19)
FAYETTEVILLE VICINITY FAYETTE COUNTY WEST VIRGINIA

HISTORIC AMERICAN ENGINEERING RECORD WV-38
SHEET 18-16

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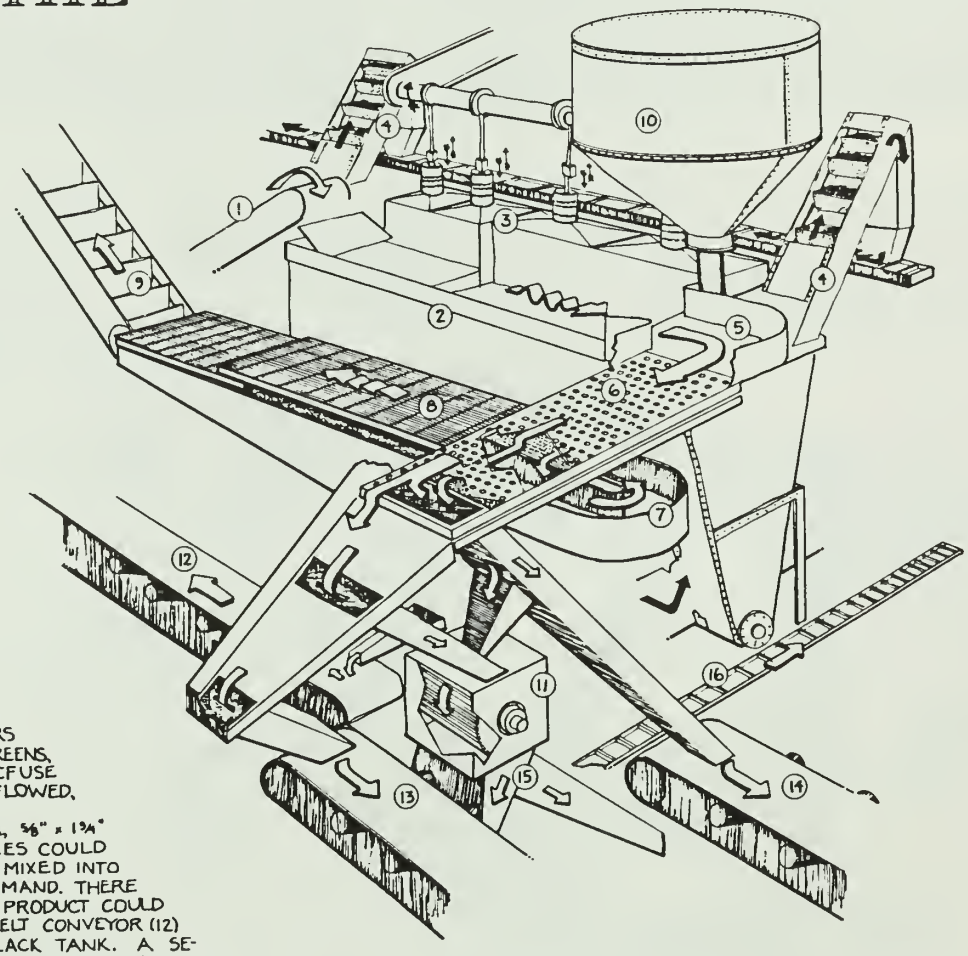
KAY MOOR COAL MINE RECORDING PROJECT

COAL MOVEMENT IN THE WASH HOUSE



ON A ROUTINE DAY, THE SIZE OF THE COAL LEAVING THE SCREENS IN THE MAIN SHAKER SCREENING ROOM AND ENTERING THE COAL WASHING ROOM WOULD RANGE BETWEEN 5/8" AND 3¾". THIS COAL WOULD PASS FROM A DOUBLE STRAND FLIGHT CONVEYOR (1) INTO THE WASH BOX OF KAY MOOR'S SIMON-CARVES BAUM JIG WASHER (2). AS IT PASSES HORIZONTALLY ACROSS THE WASH BOX, WATER PULSATIONS PRODUCED IN THE AGITATOR BY FOUR AIR PISTON JIGS (3), KEPT THE COAL SUSPENDED IN WATER WHILE HEAVIER PARTICLES OF REFUSE DROPPED TO THE BOTTOM OF THE WASHER TO BE REMOVED BY TWO DEWATERING ELEVATORS (4).

WHEN THE COAL REACHED THE FAR END OF THE WASH BOX, IT PASSED ONTO CURVED SLUICES (5) THAT CARRIED IT TO A SERIES OF SIZING SCREENS (6). EN ROUTE TO THE SIZING SCREENS, EXCESS WATER MIXED WITH FINE COAL FLOWED ONTO A LOWER SLUICE (7) THAT FED ONTO TWO DEWATERING SCREENS (8). THESE TWO SHAKER SCREENS, DRIVEN BY WOODEN CONNECTING RODS ON AN ECCENTRIC SHAFT, CONVEYED FINES AND SLACK COAL ONTO A FLIGHT CONVEYOR (9) LEADING BACK INTO THE MAIN SCREENING ROOM AND DIRECTLY INTO RAILROAD CARS OR THE SLACK STORAGE TANK. THE WATER PASSED THRDUGH THE SCREENS, INTO A SUMP, AND WAS RECYCLED, ALONG WITH WATER FROM THE REFUSE DEWATERING ELEVATORS, INTO A LARGE CONICAL TANK (10), WHERE IT FLOWED, BY GRAVITY, BACK TO THE WASH BOX.

THE SIZING SCREENS SORTED THE WASHED COAL INTO ¼" x 5/8" PEA, 5/8" x 1¾" NUT, 1¼" x 3" STOVE, AND 3" x 3¾" EGG COAL. THESE VARIOUS SIZES COULD EITHER BE RUN THROUGH A CRUSHER (11), LOADED SEPERATELY, OR MIXED INTO A WIDE VARIETY OF COMBINATIONS, DEPENDING UPON CUSTOMER DEMAND. THERE WERE A SERIES OF CHUTES AND BELTS BY WHICH THE FINISHED PRODUCT COULD BE SENT TO STORAGE OR LOADED ONTO RAILROAD CARS. ONE BELT CONVEYOR (12) CARRIED COAL BACK TO THE MAIN SCREENING ROOM AND INTO THE SLACK TANK. A SECOND BELT CONVEYOR (13) LOADED COAL INTO RAILROAD CARS ON TRACK 1, WHILE A THIRD (14) LOADED RAILROAD CARS ON TRACK 2. TWO CHUTES COMING OUT OF THE CRUSHER (15) COULD LOAD COAL ONTO TRACKS ONE OR TWO. A CHAIN CONVEYOR (16) CARRIED COAL OVER TO TRACK 4 WHERE IT COULD BE MIXED WITH LARGER SIZES OF COAL COMING DIRECTLY OFF THE SCREENS IN THE MAIN SHAKER ROOM.

NOTE - NO SCALE.

DELINEATED BY: RICHARD R. SARIAN: 1986

KAY MOOR COAL MINE RECORDING PROJECT

KAY MOOR COAL MINE - 1900
SOUTH SIDE OF NEW RIVER, 175 MILES UPSTREAM OF NEW RIVER GORGE BRIDGE (US RT 19)
FAYETTEVILLE VICINITY FAYETTE COUNTY WEST VIRGINIA

SHEET 18-18

HISTORIC AMERICAN ENGINEERING RECORD WV-38

REFERENCES

ATHEY, LOU
1986 *Kaymoor. A New River Community.* Eastern National Parks and Monument Association.

BUHLMANN, KURT A. AND MICHAEL R. VAUGHAN
1985 *An Inventory of Habitats and Associated Wildlife along the New River Gorge National River, West Virginia.* The New River Symposium.

ENGLUND, D.J., P.L. JOHNSON, AND H.H. ARNDT
1982 *Geology of the New River Gorge, West Virginia.* The New River Symposium.

GRAFTON, WILLIAM N.
1982 *Plants and Vegetation of the New River Gorge.* The New River Symposium.

MEISSNER, C.R. Jr., K.J. ENGLUND, AND P.C. MORY
1982 *Coal Resources of the New River Gorge, West Virginia.* The New River Symposium.

MICHAEL, EDWIN, M. AND LINDA S. SMITH
1988 *Toxicity of Herbicides Known to be Used in New River Gorge National River to Fish and Wildlife.* Progress Report CA 4000-7-8007.

NATIONAL PARK SERVICE, U.S. DEPARTMENT OF THE INTERIOR
1982 *General Management Plan, New River Gorge National River, West Virginia.* Denver Service Center, Denver, Colorado.

1986 "Draft Historic Resource Study, Kaymoor, New River Gorge National River, West Virginia," by Sharon A. Brown. Denver Service Center.

1988 *Management and Development Guidelines, New River Gorge National River, West Virginia.*" Denver Service Center.

1989 "Resource Inventory and Analysis, New River Gorge National River, West Virginia." Denver Service Center.

ORTH, DONALD J. AND PAUL M. LEONARD
1985 *Comparisons of Fish Assemblages in the New River, West Virginia, Above and Below Polluted Tributaries.* The New River Symposium.

OFFICE OF SURFACE MINING RECLAMATION AND ENFORCEMENT, U.S. DEPARTMENT OF THE INTERIOR
1989 "New River Gorge National River Coal Reserve Evaluation, Fayette, Raleigh, and Summers Counties, West Virginia." Report for internal use by DOI personnel only.

SOIL CONSERVATION SERVICE, U.S. DEPARTMENT OF AGRICULTURE
1975 *Soil Survey of Fayette and Raleigh Counties, West Virginia.*

WARLOW, RALPH C. AND JOHN F. WINDOLPH, JR.
1982 *Mineral Resources of the New River Gorge Area, West Virginia.* The New River Symposium.

WEST VIRGINIA DEPARTMENT OF NATURAL RESOURCES, DIVISION OF WATER RESOURCES, MONITORING BRANCH
1988 *New River Gorge National River Fecal Coliform Study.* Final report. April-September 1987.

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As the nation's principal conservation agency, the Department of the Interior has basic responsibility for most of our nationally owned public lands and natural and cultural resources. This includes fostering wise use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people. The department also promotes the goals of the Take Pride in America campaign by encouraging stewardship and citizen responsibility for the public lands and promoting citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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